PROTECTION OF GREAT LAKES WATER QUALITY

FROM ATMOSPHERIC CONTAMINANT DEPOSITION

2000

PROCEEDINGS OF A LEGAL WORKSHOP

International
Air Quality
Advisory Board

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Report to the
International
Joint Commission

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PROTECTION OF GREAT LAKES WATER QUALITY

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PROCEEDINGS OF A LEGAL WORKSHOP
HELD AT THE UNIVERSITY OF WINDSOR
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and the Great Lakes Water Quality Board

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DISCLAIMER

This report was prepared from the written program description distributed prior to the workshop, the written legal submissions, the oral presentations, and the questions and discussion. The content is designed to appeal to both the legal community and others interested in environmental protection.

The views and opinions expressed in this report are those of the workshop participants and not necessarily those of the International Joint Commission.

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Foreword

Leonard Legault, Chairman, Canadian Section, International Joint Commission

Welcome to our legal workshop. For those of you who are not familiar with the Great Lakes Water Quality Agreement and the International Joint Commission, permit me to provide background and context.

More than a quarter century ago, in 1972, Canada and the United States entered into the Great Lakes Water Quality Agreement. The Agreement committed both countries to restoring and protecting the environmental quality of our Great Lakes. Amendments in 1987 provided a specific focus on airborne toxic substances, recognizing that the atmosphere is a significant pathway by which contaminants reach the lakes. As a result of this focus on air contamination, considerable time and effort have been devoted to better understanding the atmospheric transport and dispersion of contaminants and, through the application of technology, to reducing contaminant releases to the atmosphere. Air quality today is much improved, but there is still a great deal to be done.

The Commission's role under the Agreement is to review and assess the governments' programs and progress "to restore and maintain the chemical, physical, and biological integrity of the waters of the Great Lakes Basin Ecosystem." The Commission is the conscience of the governments and the watch-dog for the public, the citizenry of Canada and the United States in this region.

This legal workshop corresponds to one element of the Commission's mandate. To more fully address the air contaminant issue, the Commission's Great Lakes Water Quality Board and the International Air Quality Advisory Board identified the adequacy of the legal framework in both countries to reflect the input of atmospheric deposition as a topic warranting consideration. Given that the atmosphere is a source of contaminants to the waters of the Great Lakes, the question is:

> What legal tools are available, under current Canadian and United States law, to control atmospheric deposition of persistent toxic substances to the Great Lakes originating from sources within and outside the basin?

Executive Summary

The workshop was designed to explore whether legal authorities exist to deal with deposition of contaminants from the air and the extent to which governments are using those authorities. The specific question was:

> What legal tools are available, under current Canadian and United States law, to control atmospheric deposition of persistent toxic substances to the Great Lakes originating from sources within and outside the basin?

A hypothetical scenario was developed in which Acme Widget, a proposed new facility, would emit mercury from its stack. A portion of that mercury would be deposited into nearby Lake Hypo, increasing the loadings to the lake by 3%. As a result, levels of methyl mercury in fish were predicted to increase by 0.6 to 3%. Legal teams from the United States and Canada presented arguments from the perspective of Acme and the environmental group, Friends of Lake Hypo. A panel provided reactions to the legal arguments and all participants engaged in open discussion.

UNITED STATES CASE STUDY

Under the division of powers in the United States, both the federal and state governments have authority for environmental protection, with primary authority generally residing with the federal government. An overview of the U.S. legal framework covered relevant sections of the Clean Water Act, the Clean Air Act, and the Resource Conservation and Recovery Act.

In the scenario, Acme applied for and received approval from the state of Michigan for an air emissions permit. The state conducted air quality and deposition modelling and a multi-media risk analysis in support of its permitting decision.

Friends of Lake Hypo argued that Acme should obtain an NPDES (National Pollutant Discharge Elimination System) effluent discharge permit under the Clean Water Act and, furthermore, should be denied a permit, since Lake Hypo was already impaired due to high levels of mercury. Key points in their submission included:

- Issuance of an air emission permit does not necessarily meet the goals and requirements of the Clean Water Act.
- Acme's stack should be considered a point source under the Clean Water Act. The definition of point source is broad enough to include any conveyance from which pollutants are discharged. Congress explicitly identified certain exceptions to the definition but did not specifically exempt stacks.
- Modelling predicts that mercury from Acme's stack would be deposited into Lake Hypo. Courts have accepted the results of modelling such as that used here as a basis for their rulings.
- The U.S. Environmental Protection Agency (EPA) has traditionally defined non-point source pollution as diffuse pollution. This case is different from diffuse pollution, in that the emissions deposited to the lake can be traced back to their source. U.S. EPA has never adequately addressed this kind of situation.

In rebuttal, Acme argued that it is a non-point source and therefore not subject to NPDES permit requirements. Key points:

- U.S. EPA has interpreted air deposition as a non-point source in the proposed revised TMDL (total maximum daily load) rule, the Great Lakes Initiative, and other documents.

- Congress intended the Clean Air Act to address air deposition, including deposition to water bodies. Congress distinguishes between emissions and discharges, using the former under the Clean Air Act and the latter under the Clean Water Act. Other provisions of the Clean Air Act, such as the Great Waters Program, indicate that Congress envisioned the statute to address air deposition to water.

- There are no cases in which stacks have been considered point source discharges. The Clean Water Act definition of conveyance does not include stacks.

- The modelling uses unrealistic, overly conservative assumptions and is not validated. Even given such conservative assumptions, modelling cannot predict any more than a very small, unmeasurable increase in mercury in Lake Hypo.

CANADIAN CASE STUDY

Under the division of powers in Canada, the environment is largely within provincial jurisdiction. In Ontario's legal framework, water sources are regulated under the Ontario Water Resources Act. Environmentally significant releases other than to water must get a Certificate of Approval under the Ontario Environmental Protection Act.

In the scenario, Acme applied for and was granted a Certificate of Approval; however, the Director imposed a more stringent mercury emission limit as a condition. Acme appealed the condition to the Ontario Environmental Appeal Board. Key points in their appeal included:

- The Director, Ontario Ministry of the Environment (MOE), does not have the legal authority to impose the condition.

- There is no reasonable link between the mercury levels in Lake Hypo and the emissions from Acme, nor is there a link from the emissions to any environmental impact in the lake.

- There is no economically achievable control technology capable of meeting the required emission rate. Acme's technology is the best available and meets the legal requirements of the Act and its regulations.

Ontario MOE responded as follows:

- The Director may impose emission limits, to prevent or alleviate an adverse effect if there are probable grounds for such an effect to occur. If contaminants in the air cause an adverse effect in the water, then the Director may limit the emission of contaminants into the air.

- Even if the mercury from Acme meets regulations, the Director must take into account total mercury input to the lake and the amount that Acme would add.

- In addition to stack source controls, Acme needs to examine other mechanisms to reduce mercury, for example, changes to its production process.

Friends of Lake Hypo supported the Director's position but contended that the Ontario MOE condition was not sufficiently stringent. Key points:

- Mercury is a persistent, bioaccumulative toxic substance that poses a known threat to human and ecosystem health. Therefore, the Director has probable grounds to impose a condition of zero discharge.

- Many international and governmental institutions, including the Canadian and the United States federal governments through the Great Lakes Water Quality Agreement, have committed to virtually eliminate releases of persistent, bioaccumulative toxic substances. The Board must consider this broader policy and legal context and impose zero discharge, which is the only way to achieve virtual elimination.

- Many international instruments, such as the Rio Declaration, articulate a precautionary approach, in light of scientific uncertainty. Canada is committed to the precautionary principle, as is Ontario through its Statement of Environmental Values. Given the scientific uncertainty associated with atmospheric transport, deposition, transformation, and uptake of mercury by fish, the Board must assume a precautionary approach and apply a zero discharge condition.

AVAILABILITY AND USE OF LEGAL AUTHORITIES

Based on the written briefs submitted and the oral arguments presented, the panel offered answers to two specific questions regarding the adequacy of the legal frameworks in Canada and the United States.

Canada

1. Does the Canadian legislative framework allow Canada to effectively address the problem of water pollution via the atmosphere?

A qualified yes. The combination of federal and provincial frameworks is patchy, not comprehensive, and frequently appears to be *ad hoc* and subjective.

2. Does Canada's domestic legislative framework provide for effective fulfillment of its international obligations?

A qualified no. The framework is not sufficiently prescriptive.

United States

1. Does the United States legislative framework allow the United States to effectively address the problem of water pollution via the atmosphere?

A qualified yes. Section 112 of the Clean Air Act is adequate. However, a more aggressive and creative approach needs to be taken for application of that framework.

2. Does the United States' domestic legislative framework provide for effective fulfillment of its international obligations?

There is a disconnect between the U.S. legislative framework and the international commitment to virtual elimination, specifically in the definition of the goal. If virtual elimination is defined as absence of harm, that is, removal of fish-consumption advisories, the answer is a qualified yes. If virtual elimination is defined as zero discharge, the answer is a qualified no.

KEY ISSUES

Fulfillment of Agreement Requirements

In order to ascertain whether programs are on track to meet Agreement requirements in general and the requirements of Annex 15 (Airborne Toxic Substances) in particular, the underlying science must be improved and air and water monitoring programs expanded.

The Science

Technical challenges must be addressed to better link loadings to a particular water body back to specific pollutant sources. Also, the scientific community must be better engaged so their work informs policy making. The science to link atmospheric deposition back to individual sources, where reductions are required, can proceed in parallel with work on the institutional framework to achieve those reductions.

Total Maximum Daily Load

The TMDL (total maximum daily load) process under the U.S. Clean Water Act offers promise as a legal authority and conceptual approach to deal with air deposition of contaminants to a water body. However, the time frame to implement the process, much less to realize environmental improvements, is too long. Appropriate legal and institutional frameworks must be developed in a more timely manner.

Virtual Elimination and Precaution

The concept of virtual elimination for persistent toxic substances has been adopted at the national level in both Canada and the United States reflected, for example, in domestic federal legislation. Their commitment is further reflected as signatories to the Agreement. The precautionary principle has been articulated at the international level and ascribed to by both countries. However, both Canada and the United States need to more explicitly incorporate virtual elimination and precaution into specific domestic programs and decision-making processes. Further, both countries need to better align their existing legislative and institutional frameworks and better use their authorities to help meet their international obligations.

Other Legal Authorities

The U.S. attorneys based their cases on selected provisions of the Clean Air Act and the Clean Water Act. Other sections of the Clean Air Act could provide additional tools to protect water quality from air contaminant deposition and should be explored.

States have the option of exercising their independent sovereign authority to act or regulate in the area of toxic air deposition, to account for persistent, bioaccumulative toxic substances and for multiple exposure pathways. Legal arguments around the application of state authorities, such as Michigan's Rule 228, would also be beneficial.

Introduction

BACKGROUND AND CONTEXT

This workshop addresses whether the United States and Canada have the legal authority to adequately deal with the atmospheric deposition of persistent toxic substances into the Great Lakes. The International Joint Commission first recognized a quarter century ago that atmospheric emissions from sources both within and outside the Great Lakes basin contribute significantly, through deposition, to the total burden of persistent toxic substances in the lakes. Since first determining that the air is a pathway by which contaminants reach the Great Lakes, the magnitude of atmospheric transport has become increasingly better defined. This is especially significant when considering the magnitude of the associated economic activity.

Canada and the United States are each country's largest trading partners. Over the past 25 years, the scale of human economic activity has become better understood, especially the downside – one consequence of human activity are toxic contaminants. These contaminants respect no boundary, but it has taken years to realize and appreciate that their impact on, and consequences for human and ecosystem health is not trivial. The atmospheric deposition of persistent toxic substances is a barrier to restoring and protecting the lakes.

To ensure that the border stays friendly and that citizens of both nations continue to enjoy a high standard of living, contaminant issues, among others, need to be addressed in an amicable way.

When the United States and Canada amended the Great Lakes Water Quality Agreement in 1987, both countries formally acknowledged for the first time that atmospheric deposition had to be dealt with. Specifically, the addition of Annex 15 – Airborne Toxic Substances – committed Canada and the United States to determine contaminant loadings into the Great Lakes via atmospheric deposition and to develop, adopt and implement measures to control toxic substance emission sources and eliminate persistent toxic substance emission sources and, hence, eliminate the loadings.

To assist the governments in this endeavor, the Commission's Great Lakes Water Quality Board and International Air Quality Advisory Board sponsored a workshop, held May 21-22, 1997 in Romulus, Michigan, that provided opportunity for dialogue between scientists and managers. Specifically, the technical presentations at that workshop communicated to managers a distinct need to more fully develop the tools necessary to address contaminant air transport and deposition. The boards began to wrestle with the question of how, given the technology available and the existing legal structure within each country.

From a technological perspective, contaminant emissions to the atmosphere can be reduced and eliminated through application of control technology and changes in production processes. The boards, however, also saw an opportunity to explore the legal landscape, specifically the question posed in the foreword by Chairman Legault, what legal tools are available to protect water quality from contaminant air deposition? If Canada and the United States already have the authority to protect water quality from contaminant deposition from the air, through regulations and other legal tools, is that authority being adequately applied? If authority is not in place, should the governments ask Parliament and Congress for such authority?

The purpose of this workshop was to explore what legal tools are available in an animated and interactive setting resembling a "moot court," in an environment of mutual trust and respect. The workshop was designed to enhance awareness of legal issues related to protection of water quality from air deposition of contaminants, particularly persistent toxic substances, arising from human activity. The premise was that legal requirements heretofore typically applied to emissions from such sources have been satisfied.

The workshop was designed to provide a fact-finding environment to identify and demonstrate legal tools that could mitigate contributions of atmospheric contaminants subject to deposition and to assess the relative capabilities of such tools. Recognizing the myriad technical, legal, and policy aspects that could be considered, as well as the distinct regulatory structures in Canada and the United States, three hypothetical scenarios were created:

- The **technical scenario** was constructed largely from "real world" information. It describes a hypothetical water body, Lake Hypo, which could be adversely impacted by mercury emissions from a proposed new source, Acme Widget, located near the lake shore. Human health could be adversely impacted through consumption of fish whose mercury concentrations could be increased by the release from Acme. The technical scenario underpins both the U.S. and the Canadian legal scenarios.
- The **United States legal scenario** was constructed under U.S. federal and Michigan state law as a challenge to the operation of a new air source. Under this scenario, a permit has been issued to a new air source, and an environmental non-government organization (ENGO) has filed a suit against the source, among other legal claims, for potential violation of environmental protection laws. A hearing is held on cross motions for a summary judgment.
- The **Canadian legal scenario** was constructed under Ontario law where a Certificate of Approval has been issued by the Ontario Ministry of the Environment for a new air source. A hearing is held in response to the source's appeal of the condition imposing a mercury emission limit in the Certificate, and the ENGO has been granted intervention status.

Although the scenarios are realistic, a number of simplifying assumptions were made to ensure focus on the legal question at hand. For each legal scenario, a permitting process presently in place under the prevailing regulatory structure in each country was used.

To be able to address contaminants that cross the border, it is essential that citizens of one country understand and appreciate not only the governmental and legal structure of their own country, but the infrastructure and arrangements of their neighbor across the border. The Detroit incinerator case of the late 1980s provides a prominent example of the importance of such understanding. The facility in that case was built on one side of the border but impacted people on both. The resulting legal issues and court case demonstrated the similarities and dissimilarities in each government's administrative and legal structures and a lack of understanding of important differences between them. This present workshop was intended to further improve the understanding of such processes and differences.

Specifically, the workshop and these proceedings are structured as follows:

- Technical scenario.
- United States case study.
- Canadian case study.
- Key findings.

Given the distinct legislative structure in each country, the Canadian and the U.S. legal scenarios must be treated separately. To present arguments from the perspective of the source proponent and the ENGO, four legal teams – two U.S. and two Canadian – prepared and submitted written briefs prior to the workshop. At the workshop itself, each side presented an oral summary of its case and, to ensure that the issue was fully aired, a panel composed of Commissioners and members of the two sponsoring boards asked clarifying questions; and dialogue was stimulated through audience interaction. These written briefs, as submitted, are appended along with a summary of the oral arguments and a summary of the questions and discussion.

The panel presented conclusions in a wrap-up commentary.

PANEL MEMBERS

- Alice Chamberlin, International Joint Commission
- Wayne Draper, International Air Quality Advisory Board
- Leonard Legault, International Joint Commission
- Ed Piché, International Air Quality Advisory Board
- Vic Shantora, Great Lakes Water Quality Board
- David Ullrich, Great Lakes Water Quality Board

No decision on the cases presented is forthcoming. The workshop purpose was to lay out, not judge, legal and policy issues associated with atmospheric deposition of contaminants to a water body. The desired outcome was to gain a deeper understanding of available legal tools and their viability.

The workshop and these proceedings are a means, not an end. They provide a basis for follow-up, specifically, to stimulate further consideration by the boards, the Commission, and others about the efficacy of existing legal tools to further control atmospheric deposition of persistent toxic substances. That is, given the present technical and legal landscape, what must be done to effectively mitigate atmospheric contaminant deposition to the Great Lakes? The boards envision this workshop as one in a series of events to better understand how well legal processes function on both sides of the border to address atmospheric deposition, and to explore how the boards and the Commission can contribute to improving the processes.

TECHNICAL SCENARIO

The technical scenario is constructed from realistic and appropriate "real world" information. Since the intent is to explore legal instruments, the scenario is not unduly complex. It incorporates a number of assumptions, for instance, in regard to source emissions, deposition, and fish contaminant uptake; the merits of each could be debated. However, as constructed, the technical scenario allows a focus on the purpose of the exercise and provides the desired latitude for the legal teams to present their cases and contend the extent to which the proposed source should be controlled.

Understanding of the ecosystem can be enhanced through the use of models, such as for contaminant dispersion, deposition, transformation in the water column, and movement among ecosystem compartments, including fish uptake. Multi-pathway risk assessment and the concept of total maximum daily load (TMDL) also draw upon models. Each model relies on a series of assumptions, some of which have been validated by subsequent real-world measurements. In addition, models are continually evolving, and no one model will ever be available to provide a definitive answer. Notwithstanding the uncertainty associated with models, they can nonetheless be useful predictive tools.

The technical scenario includes:

- Why mercury?
- Physical characteristics of the hypothetical receiving water, Lake Hypo.
- Emission characteristics of the hypothetical source, Acme Widget.
- Background concentrations.
- Dispersion models.
- Chemical forms of mercury.
- Mercury deposition estimates.
- Multi-pathway risk assessment.
- Mercury transformation and fish uptake.
- Human exposure and mercury uptake.
- Fish consumption advisories.
- Summary of mercury inputs to Lake Hypo.
- Questions and discussion expanding on relevant technical aspects.

WHY MERCURY?

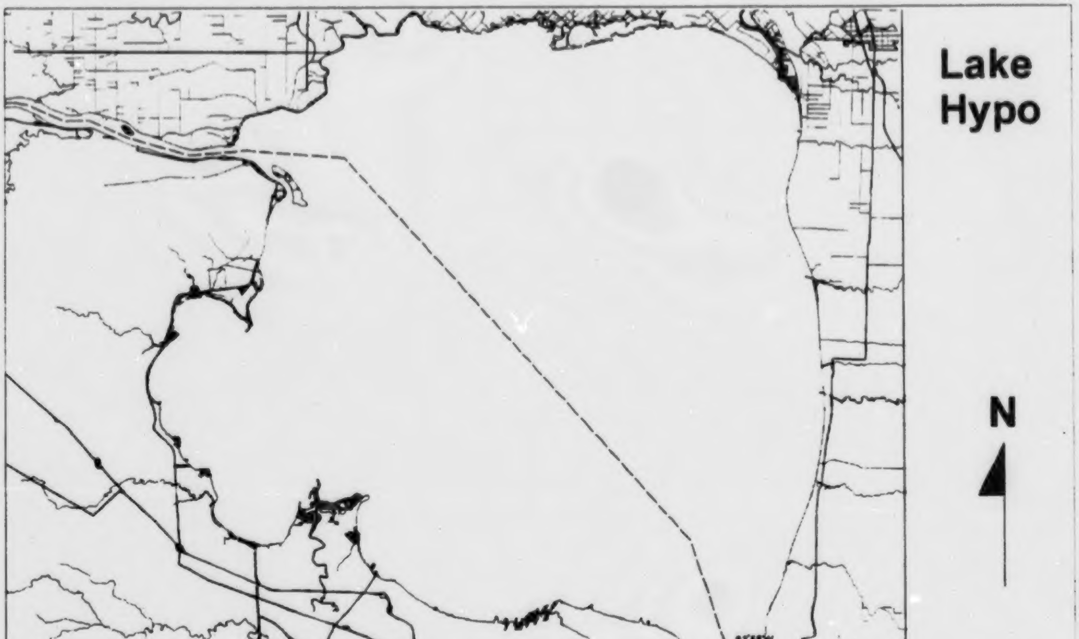
Mercury was selected, first, because elevated mercury levels have been shown to compromise environmental integrity and to pose a threat to human health. For example, mercury is responsible for 60% of fish-consumption limitations for all water bodies in Ontario and for 99% of the limitations issued for inland lakes. Additional inputs of mercury from a new source would further compromise environmental quality.

Mercury was also selected because a large body of "real world" emission data is available, as are background data for mercury in the ambient atmosphere and in the water column. Further, dispersion and deposition modelling has previously been done for this contaminant, thereby providing a comfortable level of confidence to the scenario.

PHYSICAL CHARACTERISTICS OF LAKE HYPO

The physical characteristics presented for Lake Hypo are used in various calculations to determine the impact of the hypothetical new source, Acme Widget, on Lake Hypo. The lake's characteristics are patterned on a reoriented Lake St. Clair.

- Shoreline length: 272 km
- Maximum natural depth: 6.5 m
- Maximum cross section length: 45 km (running diagonally northwest to southeast)
- Maximum width: 40 km (perpendicular to length)
- Surface area: 1115 km^2
- Elevation above sea level: 174.65 m
- 98% of water enters the lake via a large river at the northwest corner of Lake Hypo; the average discharge is 5200 m^3/sec and ranges between 3000 and 6700 m^3/sec
- Outflow from the lake is via another large river at the southeast corner
- Average flush time: 5-7 days



EMISSION CHARACTERISTICS OF ACME WIDGET

The source – Acme Widget – is located near the southeast corner of Lake Hypo, on the river that drains the lake. Acme Widget has the following characteristics:

- Mercury emission concentration: 0.075 mg/std m^3 @ 25 °C and 101.3 kPa and 7% O_2
- Stack height: 90 m (295 feet)
- Stack exit diameter: 2.5 m (9 feet)
- Stack gas exit actual temperature: 90 °C
- Stack gas velocity: 16 m/sec
- Stack gas flow rate: 78.5 m^3/sec @ 25 °C and 101.3 kPa and 7% O_2
- Mercury emission rate: 21.2 g/hour (0.508 kg/day = 193.1 kg/year = 0.21 tons/year assuming near continuous operation)

BACKGROUND CONCENTRATIONS

Consistent with measurements from the Upper Great Lakes Connecting Channels Study, the concentration of mercury in the water column – both the inflowing river and Lake Hypo – is assumed to be 2 ng/L. This value includes all upstream sources, both direct and indirect. The concentration is more than the GLI (Great Lakes Water Quality Initiative) mercury water quality criterion of 1.3 ng/L to protect wildlife and the 1.8 ng/L criterion to protect human health. Since promulgation of these criteria in 1995, the U.S. Environmental Protection Agency (EPA) has recommended that states and tribes use a revised human health criterion of 2.9 ng/L; studies of health effects continue.

Lake Hypo is treated as a flow-through system. Using the average river flow given above, this translates into an average annual mercury loading of 328 kg. This estimate will vary with the river discharge volume.

DISPERSION MODELS

Dispersion models were used to predict the point-of-impingement concentration of mercury and to provide annual average air concentrations over Lake Hypo.

Half-Hour Point-of-Impingement Concentration

Regulation 346 of the Ontario Ministry of the Environment (MOE) contains a half-hour point-of-impingement[1] standard of 5 g/m^3 for mercury and references the use of a specific dispersion model to predict the atmospheric concentration, for comparison with the standard. Regulation 346 also permits the use of other dispersion models. For the Lake Hypo scenario the U.S. EPA SCREEN3 model, which considers a wider range of meteorological conditions, was also run.

- The maximum *half-hour* point-of-impingement concentration predicted by the Regulation 346 model was 10 ng/m^3, which is 1/500th of the standard.
- The SCREEN3 model predicted a maximum *one-hour* average concentration of 17 ng/m^3.

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[1] The phrase "point of impingement" used in Regulation 346 identifies the concentration of a contaminant that is attributable to the source of that contaminant modelled at a point where a receptor is located. The model is used to calculate the maximum half-hour contaminant concentration in the ambient air attributable to the source at one or more receptor locations, i.e. points of impingement. These concentrations are compared to the air quality standards included in the Schedule to the regulation when determining compliance.

Annual Average Air Concentrations

The dispersion model used to estimate annual average air concentrations of mercury across Lake Hypo was developed by Ontario MOE and used in the Windsor Air Quality Study to estimate air concentrations in the greater Windsor area. The model and the work done are described in the report, *Mathematical Modelling and Source Apportionment.* During the Detroit incinerator court case in the late 1980s, the Ontario MOE model and the U.S. EPA Industrial Source Complex model were both run, and both yielded similar average atmospheric mercury concentrations.

For the Lake Hypo scenario, the results from the Windsor Air Quality Study were scaled to correspond to differences in stack characteristics and emission mercury rates for the Detroit incinerator, compared to the values assumed for Acme Widget. Also, in that study, the source was located some distance from the lake, whereas Acme is located near the shore of Lake Hypo. In the real world, some dispersion and dilution as well as land deposition would occur prior to the plume reaching the lake. For the purposes of this scenario, however, given the 40+ km distance that the plume travels across the open lake, these factors do not appreciably alter the deposition estimates presented below.

To maximize the potential for mercury deposition to Lake hypo, the wind rose was adjusted so that the prevailing (most frequently occurring) wind, from the south and southeast, carried the plume from Acme Widget across the lake a major fraction (30 - 40%) of the time. This translates into 60 - 80 kg of the annual mercury emissions from Acme Widget being transported across Lake Hypo. Application of the dispersion model for the source characteristics of Acme Widget provides an estimate of the average annual concentration across the area of Lake Hypo of 30 - 40 pg/m^3.

For comparison, the background mercury concentration due to global emissions is ~1500 pg/m^3, measured at locations remote from mercury sources. The human lung volume is approximately 3 L, which translates to a human intake of approximately 5 pg of mercury with each breath.

Wind direction is the major atmospheric variable to estimate atmospheric mercury concentration over the lake. Other factors such as temperature and the extent of cloud cover are relatively non-critical.

CHEMICAL FORMS OF MERCURY

Mercury emissions can occur in several forms. The most likely are elemental mercury, mercury chloride, and particle-bound mercury. These behave quite differently in the atmosphere in terms of chemical reactivity, dry deposition, and wet scavenging. The major uncertainties in calculating the deposition of mercury directly to the surface of Lake Hypo are knowing the chemical form of mercury and its affinity with other contaminants, especially particulate matter.

- **Mercury chloride** has a lifetime in the atmosphere ranging from hours to a day. It is very soluble and is therefore readily deposited in both dry or wet form.
- **Elemental mercury** has a lifetime ranging from months to a year. It has a very low solubility and, because of very low deposition rates, can be transported around the globe several times before deposition occurs.
- **Particle-bound mercury**, with a lifetime of days, is largely scavenged by precipitation and has a much lower dry deposition rate than mercury chloride. The chemistry of water droplets containing scavenged mercury is complex. For example, water droplets which evaporate release particulate mercury which can be re-scavenged later.

The total deposition to Lake Hypo can therefore vary by one-to-three orders of magnitude, depending on the chemical form of the emitted mercury.

MERCURY DEPOSITION ESTIMATES

The estimate of mercury deposition to Lake Hypo is based on a number of associated assumptions, including the form of mercury, the modelled annual air concentration over the lake, and dry and wet scavenging rates. No deliberate attempt was made to either over- or under-estimate the deposition values as a result of variability in these factors.

This scenario assumes deposition of mercury – both background and from Acme – to the lake surface only and not to the watershed, thereby excluding such factors as land use characteristics and the size of the watershed. The scenario also assumes no other mercury sources are large or close enough to Lake Hypo to contribute a significant amount of mercury chloride to the background deposition to the lake.

Acme Widget

For the model runs, it was assumed that the emitted mercury (193.1 kg/year = 0.21 tons/year) was entirely in one chemical form and remained in that form until deposited to Lake Hypo. The U.S. EPA SCREEN3 model yielded the following estimates of *annual* mercury deposition:

ANNUAL MERCURY DEPOSITION ESTIMATES (kilograms) – MODEL RESULTS

	Mercury Chloride	Particulate Mercury	Elemental Mercury
Dry Deposition	15	1.2	~0.01
Wet Deposition	2.5	2.5	< 0.01
Total Deposition	18	4	0.02

Each number has an associated uncertainty range, due to variations in such factors as deposition velocity, concentration of mercury across the lake, and deposition variability associated with meteorological conditions (such as rainfall occurrences and cloud cover), especially for dry deposition.

In reality, the amount and form of mercury emitted from the stack depends on the emission control technology used. This information is crucial to estimating mercury deposition to Lake Hypo. The scenario assumes that maximum achievable control technology (MACT) has been applied to Acme, resulting in mercury emission in the ratio of 50:50 elemental:chloride. This estimate is not inconsistent with mercury emissions from a municipal waste incinerator with non-aqueous control technology and equates to an annual deposition to Lake Hypo of 9 kg.

The scenario also assumes no particle-bound mercury in the emission. Unless the proportion of particulate mercury present were quite large, the deposition of mercury chloride would predominate.

Another consideration is mercury transformation in the plume prior to deposition. The time between emission and deposition is considered too short for transformation of elemental mercury, but mercury chloride can be transformed to elemental mercury or attached to particles in the plume. However, in-plume mercury transformations cannot be modelled easily. For simplicity, the above estimates assume no plume transformation. This results in an overestimate of mercury deposition, the extent of which is difficult to quantify.

Background

The wet deposition of background mercury can be estimated from monitoring sites in the area. The wet deposition estimate includes all forms of mercury present – chloride, particulate-bound, and elemental – in precipitation. The background concentration of mercury in precipitation averages ~ 10 ng/L, which corresponds to an annual deposition of mercury to Lake Hypo via precipitation of ~8 kg.

In the dry phase, the background concentration of mercury is overwhelmingly dominated (>98%) by elemental mercury. Dry deposition of elemental mercury is not well known but is likely much smaller than wet deposition to the lake surface. For this scenario, the annual dry deposition of mercury to Lake Hypo is assumed to be ~ 1 kg.

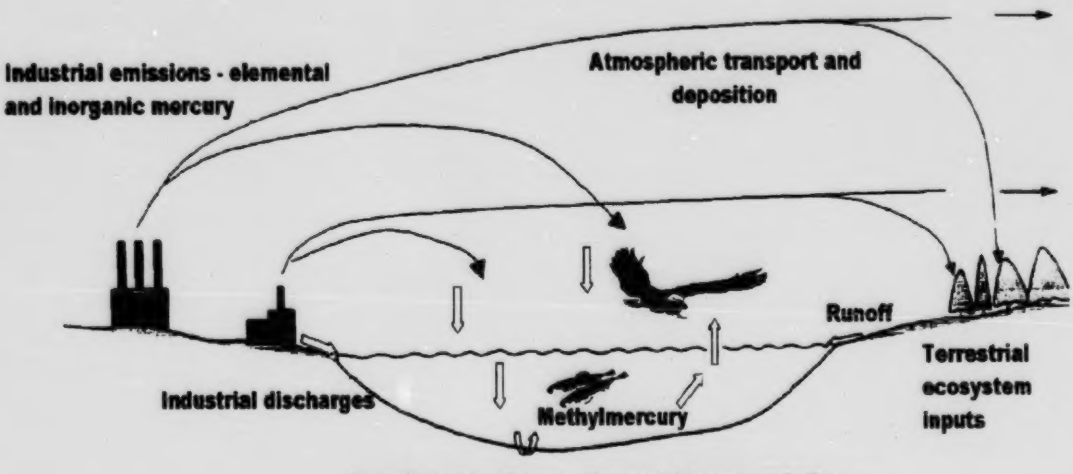
This yields a total annual background input of mercury to Lake Hypo of 9 kg.

MULTI-PATHWAY RISK ASSESSMENT

In addition to direct deposition into Lake Hypo, mercury emitted from Acme can enter other ecosystem compartments, such as land within the basin watershed. Mercury sources, transport, deposition, and recycling in the ecosystem are schematically depicted below. The scenario assumes that a multi-pathway risk assessment was conducted as part of the permitting process and that, as a result of the analysis, the proposed source is predicted to contribute to an increase in the mercury levels in fish.

Factors such as mercury sources in addition to Acme, deposition to and runoff from the land portion of the basin, and release from the sediment are necessary considerations of the risk assessment. For example, U.S. EPA's soil erosion model could be employed. However, to avoid undue complexity in the scenario and to ensure that the focus remains on the applicability of legal instruments to Acme, only three sources were considered – direct deposition to Lake Hypo attributable to Acme and from the background, and inflow of the major river. Other sources and pathways, including indirect inputs of mercury from Acme via deposition to the watershed, were excluded from further consideration.

Schematic of Mercury Emissions and Transport in the Environment


Industrial emissions - elemental and inorganic mercury
Atmospheric transport and deposition
Runoff
Industrial discharges
Methylmercury
Terrestrial ecosystem inputs
Aquatic ecosystem cycling and bioaccumulation

MERCURY TRANSFORMATION AND FISH UPTAKE

The form of mercury that poses the greatest threat to human and ecosystem health is methyl mercury. It is readily absorbed regardless of the exposure route, and it has the ability to bioaccumulate through the food web, including humans. Virtually all of the mercury detected in fish is in the form of methyl mercury.

The transformation of mercury into a methylated form depends on many factors and can vary dramatically from lake to lake. The scenario assumes that methylation occurs within Lake Hypo and that all forms of mercury undergo methylation at the same rate. Therefore, any increase in mercury deposition to Lake Hypo as a result of emissions from Acme Widget will manifest itself through an increase in the concentration of mercury in fish.

The relationship between change in mercury deposition to the water and mercury concentration in fish requires further study. Information presented in U.S. EPA's *Mercury Study Report to Congress* indicates that the relationship may be 10:2, that is, a ten-fold deposition increase translates into a two-fold fish increase. Other information indicates that a ten-fold deposition increase may translate into a greater than two-fold fish increase. This scenario assumes that the ratio is between 10:2 (lower bound) and 10:10 (upper bound).

HUMAN EXPOSURE AND MERCURY UPTAKE

The reference dose is the amount of mercury ingested daily over a lifetime that is anticipated to be without adverse health effects to humans, including sensitive sub-populations, for example, the developing fetus and young children. Of the total amount of mercury taken in by an individual (the delivered dose), the amount actually absorbed depends on the route of exposure and the form of mercury the person is exposed to. Potential exposure pathways include inhalation, dermal contact, and ingestion.

The U.S. EPA reference dose for methyl mercury is currently 0.1 micrograms per kilogram of body weight per day. The Agency for Toxic Substances and Disease Registry recommends a minimum risk level of 0.3 g/kg.bw/day. The World Health Organization has set a tolerable daily intake from all sources of 0.47 g/kg.bw/day for methyl mercury and 0.71 g/kg.bw/day for total mercury. The estimated intake for an adult Canadian of all forms of mercury via all routes is 7.7 g/day (0.11 g/kg.bw/day), equivalent to an absorbed dose of 5.3 g/day (0.076 g/kg.bw/day). Of these amounts, fish contribute about 27% of the intake and 40% of the absorbed dose. Drinking water and respiration of ambient air contribute very little to overall human exposure.

Aboriginal and certain subsistence populations may be at higher risk for methyl mercury exposure via their diet. Recreational anglers may also be at greater risk than the general population. Studies are ongoing to quantify the extent of human exposure.

FISH CONSUMPTION ADVISORIES

Since the fetus may be more susceptible than the mother to the adverse effects of methyl mercury, health experts in both Canada and the United States advise prudence to minimize the consumption of fish that have higher levels of methyl mercury. This advice covers both pregnant women and women of childbearing age. Authorities have issued the following advice regarding mercury levels in fish:

- The U.S. Food and Drug Administration (FDA) limit for methyl mercury in commercial fish is 1 part per million (1 mg/kg). U.S. FDA advises restricted consumption for pregnant women and women of child-bearing age, as well as of fish with higher mercury concentrations.
- Michigan currently has a statewide advisory for mercury, with a limit of 0.5 ppm:
    - No one should eat more than one meal per week of rock bass, perch, or crappie over 9 inches in length; or any size large- or small-mouth bass, walleye, northern pike, or muskie.

  - Women of childbearing age and children under age 15 should not eat more than one meal per month of these fish.
  - Women who are pregnant or nursing should not eat swordfish or shark.
- The Health Canada guideline for total mercury in the edible portion of fish is 0.5 ppm.
- The Ontario MOE guideline for mercury in fish flesh is <0.45 ppm for unrestricted consumption. Ontario MOE advises restricted consumption for children under age 15 and women of child-bearing age, and no consumption of fish with mercury levels above 1.57 ppm.

The *Michigan 1999 Fish Advisory* and the *Guide to Eating Ontario Sport Fish 1999-2000* were consulted to ascertain for which fish that consumption advisories had been issued because of mercury contamination. Both books present information in regard to consumption by the general population and by women and children. The bases for advisories are not unambiguous – in many cases, fish were tested for a group of contaminants and an advisory issued when one of the contaminants exceeded a criterion, but this does not mean that the fish necessarily contain all of the contaminants sought.

In general, the Michigan and Ontario books indicate unlimited consumption for smaller sizes of most fish species, increasingly restricted consumption for increasingly larger fish and, in one case (muskellunge), Michigan advises no consumption. Because of uncertainty whether Michigan and Ontario advisories are concerned with the same contaminants, the extent of agreement on an advisory for a given fish species is difficult to gauge.

Based on the information presented, the scenario assumes that, to protect human health of both the general population and women and children, increasingly restrictive consumption advisories are in place on Lake Hypo for increasingly larger members of various fish species which may include brown bullhead, carpsucker, large- and smallmouth bass, northern pike, muskellunge, walleye, white bass, and white perch.

It is assumed that, if mercury levels in fish were to increase significantly, consumption advisories would apply to smaller-sized fish and would be more restrictive for at-risk populations.

SUMMARY OF MERCURY INPUTS TO LAKE HYPO

Based on the above assumptions and modelling, the annual mercury inputs to Lake Hypo are:

- River: 328 kg
- Atmospheric background: 9 kg
- Total (without Acme): 337 kg
- Acme: 9 kg

The proposed source would increase mercury loading to Lake Hypo by 9 kg, or 3%. Assuming that an increase in mercury deposition to the water will translate to an increase in mercury concentration in fish by a ratio that can vary from 10:2 and 10:10, Acme's contribution of a 3% increase in the mercury load to the waters of Lake Hypo would translate thusly:

- 10:2 ratio: 3% water increase→0.6% fish increase.
- 10:10 ratio: 3% water increase→3% fish increase.

Recognizing the other assumptions outlined for this scenario, the 3% fish increase value is taken as the upper bound of the impact of the mercury contribution from Acme.

QUESTIONS AND DISCUSSION – TECHNICAL SCENARIO

To gain a better understanding of the technical tools and procedures, questions and discussion centered on reference dose, risk assessment, and where harm occurs.

Reference Dose

1. How is a reference dose developed and a "safe" level established, for instance, contaminant intake through fish consumption?

U.S. EPA has established reference doses that are assumed to be protective for everyone, including sensitive sub-groups. The reference dose takes into account information such as the nature of adverse effects caused by the contaminant under consideration, as well as when a person is likely to be at greatest risk. It also takes into account such factors as cumulative impacts, time frame, and bioaccumulation. In the case of methyl mercury, the reference dose is based on studies of *in utero* exposure and testing for neurobehavioral effects as children mature. To take variations in human response into account, the reference dose incorporates a margin of safety determined, in part, by the knowledge base for the contaminant.

Risk Assessment

2. Are there set criteria that can be applied to determine whether a given contaminant load increase is or is not significant?

There are no set criteria and no clear line of demarcation. The question is not so much the percent contaminant increase in water or fish but, rather, what risk results from that release and is that risk acceptable. For example, the source could increase the mercury level in fish by 20% but, if a risk analysis shows that the subsequent risk to exposed humans is still acceptable, say, 1 in 1,000,000 then the Director could decide to approve the application, regardless of the percentage increase.

3. What factors go into a risk assessment to establish acceptable risk?

The risk assessment associated with Acme's contribution is basically a risk characterization describing the level of impact to the lake, the fish, and to humans consuming the fish. In Michigan, a risk assessment considers all routes of human exposure, the impacts of the contaminants on humans, fish, farmland, among other factors. The risk assessment would consider existing contaminant levels and the anticipated increase that the new source would contribute. Models and other tools would be applied to reach a reasoned decision.

If existing exposure already exceeds desirable levels and established limits expressed, for instance, in fish-consumption guidelines, the decision-maker must consider whether additional impact should be allowed through approval of another source. Among other subjective considerations are that many people do not read fish-consumption advisories, or are not aware of them, or choose not to follow them, so that their mercury uptake may approach or exceed the reference dose.

Water quality criteria and existing water quality are also part of the risk characterization and decision-making for an air permit. In this scenario, the concentration of mercury in the water column exceeds the U.S. GLI water quality criteria set to protect wildlife and human health, and Acme proposes to add more via the air pathway. Protection of wildlife and human health through compliance with water quality criteria contributes to the legal arguments to deal with air sources. However, to simplify the scenario, such compliance was not made a critical factor.

Present Michigan policy requires multi-pathway risk assessment only for municipal waste incinerators. Conduct for other sources is optional, with decisions made on a case-by-case basis with consideration to such factors as the nature of the contaminant, the amount to be emitted, and present environmental burden. The decision is made by the chief of the Air Quality Division of the Michigan Department of Environmental Quality.

When a proposed air permit has transboundary implications, jurisdictions on one side of the border endeavor to provide, as early as possible, information to their counterparts on the other side.

Relative Significance of Health Problems

4. Does the mercury emitted from a stack cause more health and environmental harm in the air or the water?

Work is under way to strengthen source-receptor relationships, as part of the evolution of the TMDL approach proscribed in the U.S. Clean Water Act. Through two projects – at Devil's Lake, Wisconsin and the Florida Everglades – U.S. EPA is constructing the science to relate mercury emissions to an endpoint within fish. Specifically, the projects will characterize the magnitude of local, regional, national, and global atmospheric emissions, then transport those elemental and chloride mercury emissions into the watershed, followed by transformation into the methyl mercury form. The models used are primarily those contained in the *Mercury Study Report to Congress.* Devil's Lake has a small watershed and no point sources; impact is entirely by the air pathway. After establishment of the scientific connection, atmospheric emissions might have to be regulated.

Studies in the Experimental Lakes area of northern Ontario are looking at atmospheric deposition of mercury and bioaccumulation through the food chain, as well as re-entry into the atmosphere and whether fish are more susceptible to mercury in the sediments. Different mercury isotopes are being used as tracers.

United States Case Study

LAYING THE GROUNDWORK AND SETTING THE LEGAL SCENE

LEGAL CONTEXT AND BACKGROUND

Under the division of powers in the United States, both the federal and state governments have authority for environmental protection, with primary authority generally residing with the federal government. Administration of particular federal laws and programs is often delegated to the states, subject to federal oversight. The states also have independent authority to enact more stringent environmental legislation to complement and extend federal laws, except in limited circumstances where state authority is preempted by federal regulation.

The U.S. regulatory regime is highly compartmentalized, with media-specific statutes. Taken together, the statutes comprise hundreds of pages and the accompanying regulations thousands. The key statutes are the Clean Air Act and the Clean Water Act, which deal with air and water, respectively, and the Resource Conservation and Recovery Act and the Comprehensive Environmental Response, Compensation, and Liability Act, which deal with land concerns. Since these statutes and subsequent amendments were adopted over a period of years, they reflect the thinking of Congress and the administration at the time of their adoption, resulting in different approaches to environmental problems. Insufficient connectivity among the statutes may contribute to difficulties in resolving issues such as the one outlined in the scenario.

All four acts confirm federal and state authorities, but the balance of authorities differs from one to the other and also for different programs within a particular act. In general, federal statutes set bounds, and the states seek approval to receive delegation to implement programs and requirements. In some instances, delegation agreements are quite prescriptive; others are broader in regard to program implementation. Each act also contains provision for citizen suits.

U.S. statutes incorporate both technology- and management-based approaches. Ambient air and water quality standards have been established at levels that would protect, *inter alia*, public health and the environment. As a point of departure to achieve these standards and, hence, a safe environment, most federal statutes impose technology-based requirements on sources, the efficacy of which is subsequently determined. To ensure that the ambient standards are met, mechanisms are in place to implement, as necessary, measures that go beyond technology-based controls.

The U.S. legal scenario draws upon U.S. federal and appropriate Michigan state legislation. The relevant provisions of the acts are reviewed below.

U.S. Clean Air Act

The Clean Air Act, enacted in 1970 with major revisions in 1977 and 1990, is both complex and proscriptive. Unlike other key federal environmental legislation, the states have first opportunity to set control approaches and strategies which, in turn, must be approved by the U.S. Environmental Protection Agency (EPA). If they are disapproved, U.S. EPA then sets the requirements.

Section 112 of the Act, added in 1990, lists 188 hazardous air pollutants, with the requirement to identify source categories and apply MACT (maximum achievable control technology) standards to the pollutant sources. U.S. EPA promulgates and enforces technology-based levels and performance standards. MACT standards are applied to ~185 source categories. To establish the standards, U.S. EPA is required to assess the performance of the top 12% of the sources in a given category.

The interplay between a technology-based approach and risk assessment helps ensure achievement of the objectives of the Clean Air Act. Under Section 112(F), after MACT standards are in place, residual risk must be considered. Within eight years of establishment of a MACT standard, U.S. EPA must demonstrate that there are not significant environmental or human health effects for the source categories to which the controls apply. If there are effects, then the MACT standards must be strengthened in order to reduce risk to acceptable levels.

U.S. EPA has finalized its methodology for performing residual risk assessments, which include multimedia and multi-pathway considerations. The risk assessment standards will consider benchmarks for acceptable and excessive health risk, with a grey or undefined area in between. The residual risk assessment tool has not yet been applied.

The Clean Air Act provides U.S. EPA with statutory authority to address impacts of air emissions on other media, such as soil and water. The Great Waters provisions, added to the Act in 1990, require U.S. EPA to monitor air deposition and conduct an assessment of the extent to which that deposition is responsible for environmental or human health effects or exceedences of water quality standards. The U.S. EPA Administrator is required to review all rules under Section 112 and determine whether the authorities are sufficient to mitigate contamination arising from air sources; if problems exist under existing authorities, the Administrator can make more stringent MACT standards under Section 112, applicable to either an individual source or to broad-based source categories. The Administrator is also required to recommend to Congress whether other acts need to be revised to address water quality problems arising from air deposition. U.S. EPA's most recent review has concluded that the existing Section 112 authority is adequate to address such concerns.

Mercury, one of the 188 substances on the hazardous air pollutant list, was particularly problematic to Congress when the Clean Air Act amendments were passed in 1990. Congress included additional provisions to further study the effect of mercury and to study mercury emissions from electrical utilities. In addition to MACT standards, Section 129 of the Act calls for special standards applicable to medical waste incinerators and municipal combustors which, together, are the largest U.S. sources of mercury to the atmosphere. Under Section 129, U.S. EPA establishes guidelines, which must be adopted by the states before they are federally enforceable. The National Academy of Sciences has undertaken a review of the mercury study, but has not yet prepared a final report.

Section 115 requires U.S. EPA to respond to any finding by an international body and rule whether the alleged harm needs to be addressed. Section 126 addresses state transboundary considerations.

U.S. Clean Water Act

A keystone to the U.S. Clean Water Act is the NPDES (National Pollutant Discharge Elimination System) permit program, under which all point source effluent dischargers are subject to permit limitations. The Act also incorporates technology- and management-based approaches. The technological perspective is manifested through such release limit requirements as new source performance standards, best practicable technology, and best available technology.

The Clean Water Act contains a prohibition regulation – where an existing use is impaired, no further discharge of the contaminant contributing to the impairment is allowed. The concept of a total maximum daily load (TMDL) is a practical means to address contaminant input. It can also be used to regulate air sources in order to protect water quality. Included as part of the Act, a TMDL establishes the total allowable loading of a contaminant to a water system via all pathways without a resulting violation of water quality standards. Public consultation is also provided for in the Act.

The total loading is allocated to both point and non-point sources, direct and indirect, water and air, contributing contaminants to the water system in question. Releases can be allocated on a source-by-source basis or by source category. Background inputs are included in the allocation, and a margin is included for additional growth. The process is complicated, especially when factoring in air contributions from distant sources. Transboundary sources, i.e. contaminants contributed from sources outside the United States, would be considered as part of the background. Models have been used to establish loads, and court challenges have been launched.

The application of TMDLs is evolving from conventional pollutants, such as phosphorus, to persistent toxic substances, such as mercury. Some Great Lakes states have committed to TMDL development generally for smaller water bodies wholly within their boundaries. However, application of a TMDL to a Great Lake or the Great Lakes as a whole would be a significant program departure and has not been done yet.

In its proposed revisions to the TMDL rule, U.S. EPA would allow for offsets for both point and non-point sources. A new point source wishing to discharge a contaminant, or an existing source wishing to increase its discharge, could negotiate with another source – point or non-point – to decrease its contaminant contribution. That requirement would become an enforceable condition of the NPDES permit issued to the point source, providing enforceable limits, albeit indirectly, on a non-point source. This assumes, of course, that there are other point or non-point sources to offset new or existing sources.

TMDLs relate to water quality standards, which the states are responsible for setting. In the 1990 amendments to the Clean Water Act, Congress called for a Great Lakes Water Quality Initiative (GLI) to establish standards that protect the Great Lakes. Among the contaminants addressed were bioaccumulative chemicals of concern, one of which is mercury. To deal with these contaminants in a more stringent way, specific regulatory provisions include antidegradation requirements that deal with preserving existing water quality, how existing sources will decrease discharges, and how new sources will be permitted.

The Clean Water Act's Non-Point Source Program encourages pollutant load reductions from non-point sources. When Section 208 guidance was issued in the late 1970s, non-point sources were agriculture, silviculture, and storm water runoff. The impact of atmospheric deposition and inclusion of this pathway in the non-point source category is more recent.

Resource Conservation and Recovery Act

The Resource Conservation and Recovery Act establishes enforceable federal requirements with regard to waste management. States can apply for approval for state programs. The Act contains a provision allowing any citizen to sue an entity that handles, stores, transports, or discharges any solid or hazardous waste in such a manner that it causes or poses an imminent and substantial endangerment.

APPLICATION OF THE LEGAL FRAMEWORK TO THE SCENARIO

To provide opportunity to consider technical, legal, and policy issues, the U.S. legal scenario is constructed as a challenge to the operation of a new air source, Acme Widget. In the U.S., different types of sources may be subject to different regulatory limits, for example, emission limits stipulated in MACT rules. In order to provide an overall consideration of U.S. legal provisions, the nature of the source is not identified.

To ensure opportunity to explore the viability of available legal tools, the receiving water, Lake Hypo, was bestowed with a number of legal designations:

- Under Section 303(d) of the U.S. Clean Water Act, the state has included, and U.S. EPA has approved, the inclusion of Lake Hypo on its list as a water-quality-limited water body, because of fish-consumption advisories for mercury. Approval requires the state to include Lake Hypo in its planning under Section 303(e).
- Lake Hypo has been designated for use as a warmwater fishery, that is, a water body that contains fish species that thrive in relatively warm water. Warmwater fish species include bass, pike, and walleye.
- Lake Hypo is subject to state-issued mercury-based fish consumption advisories for bass, pike, walleye, and several other fish species. If the designated uses of a surface water are not attained because of mercury contamination, the state's antidegradation rule prohibits the lowering of water quality with respect to mercury. The rule applies to a new or increased loading of pollutants from any source to state surface waters for which independent regulatory authority exists requiring compliance with water quality standards.

Through a new source permitting process under the U.S. Clean Air Act, Acme Widget applied to the Air Quality Division of the Michigan Department of Environmental Quality for an air use permit for a new source to be located near Lake Hypo. Technical staff reviewed the application, with consideration of the technical information presented above, and applied MACT standards from facilities with comparable characteristics to ensure that the source complied with Clean Air Act requirements. The technical review included a multi-pathway risk assessment. After the conclusion of its review, a public notice was posted for a period of 30 days.

Because Acme would emit mercury to the atmosphere, a portion of which is predicted by modelling to be deposited into Lake Hypo, thereby increasing the total amount of mercury in the lake, a public hearing was requested and held. After considering all the information received, the Division Director or his delegate approved the request as submitted, concurring with his staff's recommendation for applicable conditions. He deemed as acceptable a maximum 3% increase in the level of mercury in fish, and concluded that the 0.1 μg/kg.bw/day reference dose for mercury would be met, even for those sub-populations whose consumption of fish from Lake Hypo would result in their approaching the limit. The division notified the applicant and the opponents of its decision.

The ENGO, Friends of Lake Hypo, then filed a suit against Acme Widget for potential violation of environmental protection laws, specifically, the discharge of pollutants without an NPDES permit, as required under the U.S. Clean Water Act. The suit also included provision to make other legal claims under state or federal law. A hearing was held on cross motions for a summary judgment,[2] with each side presenting the technical and legal bases for their positions. These bases are presented below.

The technical scenario, above, presents a synopsis of the information that supports the permit. The technical scenario should be viewed as credible rather than exhaustive. The legal scenario assumes that expert witnesses have been called and expert testimony provided.

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[2] A summary judgment is a pre-trial motion or procedure which seeks a court decision on the merits of the case where all relevant facts have been established, for the record, through affidavits, sworn deposition testimony, stipulation of the parties, or other legal means. The court will not grant a motion for summary judgment if there are disputed facts. If the motion is denied, the matter goes on to trial.

PLAINTIFF – FRIENDS OF LAKE HYPO

MOTION FOR SUMMARY JUDGMENT[3]

Neil Kagan and Paul Benington

INTRODUCTION

Mercury – A Contaminant of Concern

The presence of mercury in air and water has increased dramatically over the past century due to industrial activity in the Great Lakes region and elsewhere. Mercury poses a real – not hypothetical – danger. Those who eat contaminated fish – especially subsistence populations, women of childbearing age, and children – are at risk. Mercury is a potent neurotoxin and even at very low levels can cause subtle but permanent damage to the brain and to the central nervous system. For instance, infants exposed to elevated levels of methyl mercury can suffer from cerebral palsy, mental retardation, and delayed walking and speech. In wildlife, mercury can cause infertility, interfere with reproduction and development, and lead to behavioral impairments and death.

The Issue

The overarching issue in this case is whether existing laws designed to protect water quality provide the means to control atmospheric deposition of mercury traceable to a particular facility. The plaintiff, Friends of Lake Hypo will show that:

- Acme Widget may not operate its facility without getting a permit pursuant to the Clean Water Act.
- Acme may not get a water quality permit because mercury from its stack would exacerbate the already existing impairment of Lake Hypo's warm-water fishery and reduce the lake's water quality.

Friends is not pursuing a claim under the Resource Conservation and Recovery Act (RCRA). Under the agreed facts, all the mercury emitted from Acme's stack will be in a gaseous form, and RCRA applies only to solid waste.

Judgment Sought

Friends contends that Acme's proposed addition of mercury by the air pathway to Lake Hypo from its stack constitutes a pollutant discharge under the Clean Water Act. Therefore, Acme is obligated to obtain a Clean Water Act permit before discharging mercury into Lake Hypo. Friends seeks the following relief from the court under the Act:

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[3] Full brief – Appendix D.

A judgment declaring that Section 301(A) prohibits Acme from discharging mercury from its stack into Lake Hypo without getting a permit pursuant to Section 402(A), and an order permanently enjoining Acme from operating its facility at least until it applies for and receives a Clean Water Act permit.

Factual Background

Consider the following facts:

- The U.S. Environmental Protection Agency (EPA) has established the safe level for mercury in water at 1.8 ng/L for people and 1.3 ng/L for wildlife. The present concentration in Lake Hypo is 2 ng/L. Even without contributions attributable to Acme, mercury levels are unsafe for both people and wildlife.
- Mercury-based fish-consumption advisories are already in effect for bass, pike, walleye, and several other fish species found in Lake Hypo. Because of the advisories, Michigan has included Lake Hypo on its list of water-quality-impaired segments needing a TMDL (total maximum daily load) for mercury.
- Through its air permitting process, Michigan predicted that the mercury contribution from Acme would increase methyl mercury levels in the fish in Lake Hypo by 0.6 to 3%. Friends considers this significant – fish-consumption advisories would apply to smaller-sized fish and would be more restrictive for at-risk populations.

THE CLEAN WATER ACT – OBJECTIVES, GOALS, AND SCOPE

The Clean Water Act is a comprehensive water quality statute, with broad environmental and public health purposes and ambitious pollution control goals. Its provisions should be construed broadly to give the Act full effect. Friends contends that Acme's proposed addition of a toxic pollutant to Lake Hypo via the air pathway clearly falls within the domain of the Act. The mercury deposited to Lake Hypo via the air pathway can be traced back to the Acme stack, which Friends contends is a point source where technology-based controls can be applied and industry-tailored limitations effectively implemented and enforced to protect water quality.

Congressional Intent

The Act's stated objective is to restore and maintain the chemical, physical, and biological integrity of the waters of the United States. Congressional intent supporting this objective was expressed by the House Committee on Public Works in the broadest possible terms, "Any change induced by man which overtaxes the ability of nature to restore conditions to natural or original is an unacceptable perturbation." To accept Acme's request to further perturb Lake Hypo's already polluted waters would frustrate Congress' clearly stated intent.

In addition, Congress declared a national goal to eliminate the discharge of pollutants into navigable waters and to prohibit the discharge of toxic pollutants in toxic amounts. Further, Senator Edmund Muskie, the chief proponent of the Act, stated that the Act's goals "are not merely pious declarations that Congress so often makes in passing its laws. On the contrary, this is deliberately a life or death proposition for the nation."

Judicial Interpretation

In various judicial cases, courts have found that the Act was designed to regulate, to the fullest extent possible, those sources emitting pollution into rivers, streams, and lakes and that its provisions be liberally construed to achieve the Act's objectives. For example, the courts interpreted the definition of navigable waters to include tributaries and wetlands that are not navigable.

Enforcement

Congressional changes to the Clean Water Act in 1972 re-focused enforcement efforts on point sources of pollution. Prior to 1972, enforcement focused on ambient receiving water quality rather than on pollution sources. That was unworkable and ineffective in large part because it was difficult to link any particular polluter to a violation of an ambient water quality standard. To protect water quality, the 1972 changes aimed to enforce limitations wherever the addition of a pollutant could be linked to a point source through imposition of technology-based controls and industry-tailored limitations at the point source.

Friends contends that Congress intended that the 1972 amendments apply to air sources such as Acme. For example, a Senate Committee on Public Works report states that, "Where the Administrator can identify a direct link between a discharge source and water quality, the Administrator is authorized to tighten controls on the polluter." Since a direct link between Acme's proposed mercury discharge and Lake Hypo's water quality has been established, the Clean Water Act should be triggered.

Senator Muskie also stated, "Based on the history of consideration of this legislation, it is obvious that its provisions and the extent of application should be construed broadly." Friends of Lake Hypo and Acme both agree that the Clean Water Act is broadly remedial, and both accept that the call for the liberal interpretation of remedial statutes is consistent with the Act's purposes. Further, Friends and Acme both agree that some line must demarcate the limit of the Act's reach, but disagree about where the line is drawn and whether the line can move as advances in science and technology are achieved. The line currently includes pollutants added to navigable waters that are traceable to a point source.

The question is, on which side of the line does Acme's addition of a toxic pollutant to Lake Hypo fall?

THE CLEAN WATER ACT – APPLICATION TO ACME WIDGET

Friends contends that Acme's stack is a point source under the Clean Water Act and that the mercury emitted from that stack is a discharge.

Is Acme's Stack a Point Source?

The Clean Water Act defines point source as any discernible, confined, and discrete conveyance, including but limited to a short list of such conveyances from which pollutants may be discharged. By stating "including but not limited to," Congress meant that its list of point sources was not exhaustive. With an open-ended definition, the courts have recognized that the term be construed expansively.

- In the Earth Sciences case, the court said the concept of point source was designed to further the statutory scheme establishing the permit requirement by embracing the broadest possible definition of any identifiable conveyance from which pollutants may enter the waters.
- In the Hecla Mining case, the court said the touchstone for defining a point source is the ability to identify a discrete facility from which pollutants have escaped.

Accordingly, courts have held a broad range of sources to be point sources, from piles of mined materials to sand to bulldozers to backhoes to pressurized sprays from irrigation systems and hoses. Acme contends that the term point source should not apply to its discernible, confined, and discrete conveyance. Its stack, 90 metres high and with an exit diameter of 2.5 metres, is easily identified as a discrete facility from which pollutants would be discharged into Lake Hypo and is, without question, a point source.

Acme claims that U.S. EPA has authoritatively determined atmospheric deposition to be a non-point source exempt from the permit requirement. Although the atmosphere is undeniably the route by which the mercury will reach Lake Hypo, Acme's stack, not the atmosphere, is the source. The indirect nature of the discharge through the atmosphere does not make it any less a discharge. EPA has never squarely addressed the issue this case presents, and has never said that an air source emitting a pollutant that falls into the water is a non-point source. All that EPA has said is that diffuse pollution coming from the atmosphere comes from a non-point source.

- When EPA said that the proposed revisions to the TMDL regulations include atmospheric deposition as a non-point source, it meant that it will not allow the states to ignore pollution that comes from the atmosphere when establishing TMDLs. EPA did not mean that an identifiable source of pollution deposited into a specific water body is a non-point source simply because the pollution travels through the air.
- When EPA said in the proposed revisions to the antidegradation regulations that it would consider an offset from an air pollution source only where the air pollution source directly affects the water body, it said nothing to suggest that it considered such an air source to be a non-point source.

Acme contends that no other air source has ever been required to get a Clean Water Act permit. Friends contends that this argument has never been taken seriously by those who seek creative solutions to improve the human condition.

In the Clean Water Act, the term point source is very broad. Congress has enumerated express exceptions to its application, and the courts have held that making exceptions lies only with Congress. In NRDC v. Costle, U.S. EPA attempted to exempt discharges of pollutants from agricultural and silvicultural activities as well as discharges from certain animal confinement facilities, arguing that the number of permits from all such sources would be overwhelming. The court rejected EPA's argument, holding that EPA may not on its own authority exclude a point source from the permit program.

Acme argues a similar justification to exclude air sources. Although Congress has exempted certain sources from the definition of point source, it has not exempted air sources like Acme, which add a pollutant to a specific water body from a stack.

Regarding the administrative burden of requiring NPDES (National Pollutant Discharge Elimination System) permits for additional source categories, such as air sources, the courts have told U.S. EPA that, unless Congress changes the law, it has no choice.

Is the Mercury from Acme's Stack a Discharge?

The Clean Water Act defines discharge as any addition of any pollutant to navigable waters from any point source. The key word is "any," which is defined with terms like all, regardless of kind, without restriction or exception. Friends contends that "any addition" includes both direct and indirect discharges, and that Congress did not limit the Clean Water Act but chose to use "any addition" and not just any direct addition. Acme's projected addition of mercury to Lake Hypo by the air pathway has been established and is traceable to its point source stack.

Acme distinguishes between the Clean Water Act which addresses discharges into water, and the Clean Air Act, which addresses emissions into air. Friends claims that a discharge can include the emission of a pollutant indirectly deposited into a water body. The Clean Water Act defines discharge expansively and unconditionally to mean any addition of any pollutant to navigable waters from any point source. Each point source is thus subject to control, regardless of the pollutant route from the point source to the water and regardless of the medium of conveyance.

Senator Muskie explained Congress' intent in the Clean Water Act to prohibit pollution from both indirect and direct sources, that is, discharges. The courts have also interpreted discharge to include indirect discharges, rejecting the argument that pollutants must be discharged directly into navigable waters, upholding a conviction for violating the Clean Water Act where a concentrated sand-and-concrete mixture was sprayed through the air before it was deposited into navigable waters, and holding that spraying too much waste water on the fields, which then ran off into a nearby stream, was a point source discharge.

SHOULD ACME RECEIVE A PERMIT?

Friends contends that Acme cannot receive a discharge permit pursuant to Section 402(A) of the Clean Water Act. Under U.S. EPA's prohibition regulation, Michigan may not issue a Clean Water Act permit to a new source that will cause or contribute to a violation of any one of the three components of the water quality standard, that is:

- Designated uses of the navigable water body.
- Water quality criteria based on those designated uses.
- Anti-degradation policies and implementation procedures.

A violation of Lake Hypo's water quality criteria already exists because the lake's designation as a warm water fishery is not being attained, that is, fish in Lake Hypo are not safe to eat because of mercury contamination. That prompted Michigan to list the lake as a water-quality-limited segment in need of a TMDL. Friends contends that the mercury to be discharged from Acme's stack and deposited into Lake Hypo will translate into an increased mercury concentration in the lake's fish, thereby exacerbating the existing violation by making the fish even less safe to eat.

A state may permit a new source or discharge of a pollutant responsible for limiting water quality only if it has calculated a pollutant load allocation, a TMDL for the water body in question. The TMDL must contain an allocation for future growth and establish compliance schedules for current permit holders. If the state has not completed a TMDL, a new source or discharge cannot get a permit.

No TMDL has been developed for Lake Hypo. In the absence of a TMDL, U.S. EPA's prohibition regulation prohibits the issuance of an NPDES permit to Acme because its discharge will worsen the existing impairment to a designated use of the water body.

Acme's discharge should also be prohibited on a separate but related consideration. Mercury is present in the water column of Lake Hypo at a concentration which already exceeds the safe levels set out in the Great Lakes Water Quality Initiative (GLI) to protect people and wildlife. The deposition of additional mercury from Acme's stack will lower the lake's water quality even further, violating the anti-degradation policy for the lake.

Acme contends that its discharge will not lower Lake Hypo's water quality with respect to mercury. It argues that U.S. EPA approved Michigan's anti-degradation provisions, which provide that increased loadings of mercury do not constitute a lowering of water quality, so long as the loadings are within the authorized levels of a limit in an existing control document, and that its permit is a control document. Acme therefore concludes that the increased mercury loading predicted by the modelling conducted in the air permit proceeding does not constitute a lowering of Lake Hypo's water quality.

Friends notes that, although Michigan submitted anti-degradation regulations, U.S. EPA has neither reviewed nor approved them. Friends' position is that EPA should not approve the regulations because they are not consistent with the GLI antidegradation policy and U.S. EPA should not open a loophole for increased mercury loading. The GLI antidegradation policy prohibits a point source from discharging into a water body any additional amount of a pollutant that exceeds the minimum water quality standard.

Even if U.S. EPA reviews and approves Michigan's anti-degradation regulations, Friends contends that Acme's air permit is not a control document. A control document is any Michigan authorization to any source of pollutants to surface water. Acme's air permit is not an authorization to discharge pollutants to surface waters but to air. Even if the permit were a control document, it is not an existing control document, because it was not in effect when Michigan adopted its anti-degradation provisions in 1997.

TECHNICAL CONSIDERATIONS – MODELS

Models have become indispensable to the courts and agencies in attempting to make complex decisions regarding complex systems. The courts have endorsed U.S. EPA's extensive reliance on computer models. In one case, petitioners claimed that U.S. EPA had relied on a model that had not been calibrated with real-life data, but the court upheld U.S. EPA's determination that the model was a satisfactory predictive tool on which to base its action.

Acme challenges the models used to predict that their discharge will degrade Lake Hypo's water quality and increase the mercury concentration in fish. Specifically, Acme challenges use of the dispersion model and the mercury methylation model, each on a single study. There is no indication, however, that either study has been peer reviewed or published. The evidence is too slim to dismiss the models used.

Further, the dispersion model used in this case has previously yielded results similar to those generated by U.S. EPA's industrial source ISC2 model and is thus particularly well suited to model the deposition of Acme's mercury emissions. In addition, the source operating parameters and the air transport distances are appropriate for both models. Thus, the predicted mercury deposition has a high degree of confidence.

Acme claims that actual mercury levels in rainfall are lower than predicted by models. Friends has documented data from U.S. EPA and major universities that mercury contaminates rain near Detroit as much as 65 times U.S. EPA's safe levels for mercury and, in more remote locations like Sleeping Bear Dunes, as much as 35 times. The need to clean the rain itself must precede the issuance of any permit that would allow Acme to add more mercury to an already stressed system.

CONCLUSION

In passing the Clean Water Act, Congress wisely crafted a law capable of reaching new point sources of pollution. In this case, the pollution travelling through the atmosphere has been traced from a particular source to a particular water body. The court must provide the following relief under the Act:

> A judgment declaring that Section 301(A) prohibits Acme from discharging mercury from its stack into Lake Hypo without getting a permit pursuant to Section 402(A), and an order permanently enjoining Acme from operating its facility at least until it applies for and receives a Clean Water Act permit.

DEFENDANT – ACME WIDGET

MOTION FOR SUMMARY JUDGMENT[4]

Peter Holmes and Karen Schodowski

Friends of Lake Hypo's claims are contrary to law and should be rejected. Their claims are in effect an attack on the U.S. Environmental Protection Agency's (EPA) MACT (maximum achievable control technology) standards and the Michigan Department of Environmental Quality's (DEQ) permit, but Friends either opted not to challenge those standards or the permit, or made a challenge and failed.

AIR PERMIT CONDITIONS

Michigan DEQ issued an air permit to Acme after a full opportunity for public comment and after conducting a comprehensive multi-pathway risk assessment that demonstrated, despite overly conservative assumptions, that the emissions would not pose an unacceptable risk to public health. To meet the terms of the permit, Acme used state-of-the-art technology to reduce mercury emissions and comply with EPA's MACT standards under the Clean Air Act. MACT standards are set at the maximum degree of reduction in emissions, including a prohibition on those emissions where achievable, with consideration, *inter alia*, of a broad range of non-air quality health and environmental impacts, including the kind of impacts claimed by Friends. For a new source, the MACT standard can be no less than the emission control achieved in practice by the best controlled similar source.

MODELS

Assumptions and Limitations

An air dispersion model was used to estimate deposition to the lake, along with a second model to link mercury in the water column through the food chain to concentrations in fish tissue. Friends treats the model output as proven fact, but models can only predict or estimate, and the predictions in this case are scientifically flawed because of several key assumptions.

It is assumed that none of the mercury chloride emitted by Acme will be chemically transformed. The stipulated facts acknowledge that this assumption overestimates the amount of mercury deposited to Lake Hypo from Acme, but recognizes that not enough is currently known to quantify the extent of the overestimation. It could be as high as 5 or 10 fold.

The model unrealistically assumes that no other sources contribute a significant amount of mercury to Lake Hypo. This overstates the predicted percent increase of mercury in the lake attributable to Acme.

The model further assumes that all forms of mercury deposited in the lake will be transformed to methyl mercury at the same rate. In its 1997 *Mercury Study Report to Congress*, U.S. EPA states that there is a large degree of scientific uncertainty regarding the rate at which methylation and demethylation takes place.

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[4] Full brief – Appendix E.

The model unrealistically assumes "near continuous" operation of Acme's plant.

Regarding accumulation of mercury in fish tissue, the model assumes, as an upper bound, that all of the mercury deposited in the lake ends up in fish tissue and, as a lower bound, that only 20% ends up in fish tissue. This shows a large degree of scientific uncertainty. Also, Acme argues that there is inadequate scientific information to set the lower bound at 20%. In its review of the Mercury Report, U.S. EPA's Science Advisory Board stated that, "EPA's modeling of the post-deposition fate of mercury is over-simplified, neglects available information, and does not reflect recent advances in the science. The deficiency is one of the most serious problems in the report."

The Science Advisory Board also stated that it is not presently possible to establish a quantitative relationship between sources and actual exposures in humans or wildlife. Both the report and the review acknowledge that, because of various scientific deficiencies, the models used by U.S. EPA cannot predict wildlife criteria, which are based on water column concentrations of mercury, with less than an error factor of at least 100 to 1,000 times. The Science Advisory Board stated that the human and wildlife exposure models are so weakened that they have little predictive capability. U.S. EPA recognizes that it cannot support the existing human health criteria and has recommended an upward revision of the mercury criterion from 1.8 to 2.9 ng/L.

In its Mercury Report, U.S. EPA stated that there is "no validated air pollution model" to estimate wet and dry deposition of vapor phase compounds close to an emissions source, precisely what was attempted in this case. The ISC2 model is a preferred U.S. EPA model. U.S. EPA guidance states that if a modification is made to one of its preferred models, that model loses its preferred status and its use must be justified on a case-by-case basis. In this case, the Ontario Ministry of the Environment (MOE) model was run rather than the ISC2 model. That the two models produced "similar results" in a prior situation is insufficient. Thus, reliance on the Ontario MOE model is ill-founded and Friends' assertion of great confidence in the prediction that Acme's stack emissions would add up to 9 kg of mercury to Lake Hypo is refuted by the criticisms of the Science Advisory Board and by statements of U.S. EPA itself.

The model, which contains multiple over-estimations, predicts that Acme's stack emissions will increase mercury levels in fish tissue by less than 0.6 to 3%. The "less than" is important – the stipulated facts acknowledge that Acme's mercury contribution is over-estimated. The true model output is less than 0.6% to less than 3%, but the science is inadequate to determine by how much. Therefore, for purposes of Friends' motion for summary judgment, the disputed facts must be construed against that motion, which must be judged against a standard of a less than 0.6% increase, not 3%.

Judicial Findings

The courts and, in particular, the U.S. Court of Appeals for the Sixth Circuit (which includes Michigan), have scrutinized the use of computer models and have held that use of models for purposes analogous to those claimed by Friends was arbitrary and capricious, specifically:

- In Ohio v. U.S. EPA, the Sixth Circuit rejected use of an unvalidated model to predict sulphur dioxide emission diffusion at two power plants.
- In an earlier related case, the Sixth Circuit concluded that U.S. EPA had not validated or empirically tested the model at sites and circumstances where lakeshore effects on dispersion were significant but unknown.
- In Columbus and Southern Ohio Electric v. Costle, the Sixth Circuit upheld computer modelling to determine whether a single county was in attainment with the Clean Air Act standards but, in a predecessor case, Cincinnati Gas and Electric v. U.S. EPA, struck down the use of a U.S. EPA dispersion model to make such a designation.

ANALYTICAL CAPABILITY – MERCURY LEVELS IN FISH

Friends has no scientific basis to claim an increase in mercury levels in fish tissue. A 0.6% or even a 3% change cannot be determined with sufficient precision. An Australian government laboratory study by Lewai and published in *Analyst* demonstrated that at a 1 ppm mercury level in fish tissue, measurements had only a 5% precision and, at 0.1 ppm, only 8 to 9% precision. This is insufficient to even confirm whether a predicted increase of 3% has occurred, must less a predicted increase of less than 0.6%.

ACME'S STACK EMISSION IS NOT A POINT SOURCE DISCHARGE

Friends argues that Acme's mercury emissions into the air, in compliance with the Clean Air Act permit, constitute a point-source discharge into the water and, thus, are also subject to an NPDES (National Pollutant Discharge Elimination System) permit under the Clean Water Act, whose requirements would apply at the identical point at which the mercury is emitted from the stack. It is highly unlikely that Congress ever intended this. Friends' argument is contradicted by the language and U.S. EPA's authoritative interpretation of the Clean Air and Clean Water Acts, by nearly 30 years of permitting history under the two statutes, and in the only reported case. Clearly, NPDES jurisdiction does not extend beyond a discharge to a receiving water to include the emission of gases to ambient air. Acme's emissions to the air do not constitute a point-source discharge to water.

The Clean Air Act and the Clean Water Act – Their Interpretation and Application

U.S. EPA has consistently interpreted the Clean Water Act to classify atmospheric deposition as a non-point source. Under U.S. Supreme Court precedent, starting with the Chevron case in 1984, judicial deference must be granted to U.S. EPA's interpretation. That interpretation need not even be the interpretation that the court would adopt, only that it be reasonable.

That atmospheric deposition is a non-point source is stated in U.S. EPA's Non-Point Source Guidance in 1987, the proposed Great Lakes Water Quality Initiative (GLI) in 1993, the final GLI in 1995, and the draft Lakewide Management Plan for Lake Michigan in 1995. U.S. EPA has codified its current interpretation in the proposed August 29, 1999 revisions to the NPDES program, specifically the federal anti-degradation policy and the total maximum daily load (TMDL) regulations. In its proposed anti-degradation policy, U.S. EPA states, "These proposed revisions explicitly include atmospheric deposition as a non-point source of pollutants." Friends claims that U.S. EPA meant to say that, as long as air deposition from a particular source cannot be modelled, atmospheric deposition is a non-point source. U.S. EPA has never articulated such an interpretation.

Actions by U.S. EPA and the states are consistent with the determination that air emission sources do not equal point-source discharges. Clearly, U.S. EPA distinguishes between an air emission source subject to the Clean Air Act, and a water discharge subject to an NPDES permit. In its proposed anti-degradation policy, because air deposition contributes to some of today's existing water quality problems, U.S. EPA is considering a possible offset from an air pollution source that directly affects a water body in the vicinity of a new or expanded discharge. This proposal is in the context of the companion TMDL rule that interprets atmospheric deposition as a non-point source.

Among the tens of thousands of NPDES permits issued by U.S. EPA and the states, not one has ever been applied to an air emission source. Not one of the more than 50 Clean Water Act effluent limitation guidelines issued by U.S. EPA has ever been applied to an air emission source. U.S. EPA's recent cluster rule embodying both water and air regulations for the pulp and paper industry deal with air deposition issues under the air portion of the rule, not under the NPDES permit program, again demonstrating that air deposition is the province of the regulatory scheme under the Clean Air Act.

Even Friends admits that issuance of an NPDES permit for an air emission has never been done in the nearly 30-year history of the Clean Water Act. Contrary to Friends' argument, the reach of the NPDES program does have limits. In two court cases, the National Wildlife Federation argued that dams required NPDES permits because of water quality problems they caused. The courts ruled otherwise – relying upon U.S. EPA's consistent history of not requiring an NPDES permit at 34 other similar facilities, and the fact that the Clean Water Act vests U.S. EPA with the authority to define point and non-point sources.

The courts have stated their duty to harmonize potentially conflicting statutes wherever possible. Consistent with that duty, the U.S. Supreme Court, in Train v. Colorado Public Interest Research Group, limited application of the NPDES program by excluding discharges of radioactive materials, which are regulated under the Atomic Energy Act, stating that a clear expression of contrary legislative intent would be necessary to recognize a substantial policy change that would alter the "pervasive regulatory scheme" established in the Atomic Energy Act. That case, like this one, involved the Clean Water Act's broad definition of pollutant. Despite the absence of language in the Clean Water Act to expressly exclude radioactive materials, the court relied on U.S. EPA's interpretation and the legislative history that supported the exclusion.

Congressional Intent

There is no Congressional expression of intent to undermine the pervasive regulatory scheme of the Clean Air Act by so drastically expanding authority under the Clean Water Act. Congress clearly made regulation of air emissions the province of the former and regulation of surface water discharges the province of the latter. The Clean Water Act, which followed the Clean Air Act by scarcely two years, contains many provisions that are expressly patterned after its predecessor. Therefore, the language used in the two statutes is significant. The Clean Air Act defines an air pollutant as a substance "emitted" into ambient air. The Clean Water Act definition of pollutant borrows from the Clean Air Act definition, but refers to materials "discharged" into water, distinguishing between air emissions and water discharges. Congress continued the distinction between emissions and discharges in the Comprehensive Environmental Response, Compensation, and Liability Act, which defines a release using, among other terms, both emitted and discharged.

Yet another illustration of Congress' differentiation between emissions under the Clean Air Act and discharges under the Clean Water Act is contained in the Senate report on the 1972 Clean Water Act. That report states, "The Clean Air Act amendments of 1970 provided for a comprehensive attack on air pollution that included new source performance standards and controls over the *emission* of toxic substances. This bill would provide for new source performance standards and controls over the discharge of toxic substances." (emphasis added)

When Congress considered the precise issue at hand – air emissions that may affect water quality through atmospheric deposition – it chose to regulate through the Clean Air Act, not the Clean Water Act. Section 103 of the Clean Air Act requires U.S. EPA to perform a research program to evaluate the effects of air pollution on water quality. Title IV of the Clean Air Act establishes an entire regulatory program to address the effects of acid rain, air emissions of sulphur and nitrogen oxides on surface water and other resources.

Most significantly, when Congress established the Great Waters Program in 1990, it chose the Clean Air Act as its vehicle. Section 112(M) directed U.S. EPA to evaluate the effects from air deposition on water quality of the Great Lakes and other great waters. It also required U.S. EPA to issue further emission standards and control measures as appropriate under Section 112, not under the NPDES program or the Clean Water Act, to prevent such effects. Section 112 also established a technology-based permit program for emission sources of hazardous air pollutants that is expressly patterned after the NPDES permit program for toxic effluent discharges. The fact that Congress never once cited the NPDES program speaks volumes.

In March 1998, U.S. EPA expressly determined that the legal authorities in Section 112 are adequate to address the effects of atmospheric deposition on the Great Lakes and other great waters.

Friends also argues that a stack is a point source under the Clean Water Act. Even though the term stack is used throughout the Clean Air Act, the absence of any reference to stack in the definition of point source in the Clean Water Act is significant. Moreover, the hypothetical impact of air emissions from a stack located a considerable distance from the receiving water does not qualify as a "discernible" point source discharge under the Clean Water Act.

Friends argues against the overwhelming weight of this authority, claiming that the Clean Water Act is a broad remedial statute and should be broadly interpreted. However, even broad remedial statutes have their limits. The courts, and the Sixth Circuit in particular in the Cordova Chemical company of Michigan case, have warned against using the broad remedial statute mantra as a way to extend the scope of a statute's jurisdiction indefinitely to cover virtually every conceivable situation. The limits of the Clean Water Act are exceeded when Friends argues that an emission into the ambient air, in compliance with a Clean Air Act permit, constitutes a point-source discharge into surface water requiring a duplicative Clean Water Act permit.

Judicial Case Law

In the only reported decision on this issue, Chemical Weapons Working Group v. Department of Army, the court rejected plaintiff's logic. The emissions involved chemical warfare agents whose discharges into surface waters is absolutely barred by Clean Water Act Section 301(F). That section, as Friends concedes, is not applicable here. However, the court also rejected plaintiff's argument on grounds that are applicable here and are not unique to section to 301(F). It held that application of NPDES requirements to air emissions would be "irrational" and would have imposed the Clean Water Act discharge requirements on countless emission sources, including cars and chimneys.

The courts have clearly emphasized that the water quality effects of atmospheric deposition are expressly considered and regulated under the Clean Air Act, relying on the common sense view that a stack emits pollutants into the air, not into the water. The courts have also rejected attempts to draw an analogy with point-source discharges to groundwater that is hydrologically connected to a surface water body. Case law is evenly split on whether the NPDES program applies in such circumstances. Clearly, NPDES jurisdiction does not extend to emissions to the air, as opposed to discharges to water.

In summary, the jurisdictional scope of the Clean Water Act is clearly limited and not applicable to emissions from Acme's stack. Further, there is no precedent for two different media-specific regulatory regimes to apply permit requirements to the same source, in this case, emissions from Acme's stack. Not only would such a drastic result require clear expressions of Congressional intent, but Congress has, in fact, expressed contrary intent. In addition, Michigan DEQ performed a multi-pathway risk assessment and concluded that the air emissions would not pose any unacceptable risk. Even if there were an unacceptable risk, manifested through contaminant uptake by fish, the jurisdictional limitations of the Clean Water Act would not authorize imposition of NPDES permit requirements.

THE COURT'S JURISDICTION OVER NPDES PERMIT ISSUANCE

Federal courts have jurisdiction under the Clean Water Act to entertain citizens suits to determine whether Acme is subject to NPDES permitting requirements and to require Acme to get a permit. However, the court lacks jurisdiction to enforce water quality standards that are not incorporated into a permit. The Supreme Court and other courts have held that water quality standards are enforceable only when incorporated into a permit. When Friends seeks a declaration and a permanent injunction against issuance of an NPDES permit, arguing that Acme's operations will violate water quality standards, they are asking the court to enforce water quality standards not incorporated into a permit.

Even if the court concluded that it had jurisdiction to enforce water quality standards outside the context of a permit, it should refrain from exercising that jurisdiction on prudential grounds. A court should so refrain if litigation presents issues that would be better resolved by an administrative agency. In a similar case, a citizens suit brought to enforce water quality standards, the court held that it lacked jurisdiction to entertain allegations of violations of water quality standards. In addition, under the doctrine of primary jurisdiction, since the state agency in that case was conducting an NPDES permitting process, the court dismissed the judicial action to allow the administrative process to take its course.

Acme urges adopting the same procedure. Friends is trying to preempt the permitting process and deny Acme the opportunity to demonstrate that it can qualify for an NPDES permit, if the court determines that one is required. If the court dismisses Friends' claim and allows the permitting process to go forward, Friends would not be denied judicial review or be prejudiced in any way. It could fully participate in the permitting process and, if a permit were issued, it could also challenge the permit in the context of a petition for review by the court.

ANTIDEGRADATION

Friends has not established that Acme's operations would violate water quality standards under any circumstance. Acme contends that Michigan's anti-degradation rules are consistent with the GLI. Moreover, Acme's predicted air deposition does not constitute a "lowering of water quality" under those rules, which exclude increased loadings "within the authorized limit in any control document," such as a Michigan DEQ-issued air permit. In this case, Michigan has considered the impact to surface waters prior to issuing the air permit, and this exemption is appropriate. Thus, the predicted loadings would not violate the antidegradation rules.

Alternatively, Acme should have the opportunity to engage in the TMDL process itself. Michigan could identify potential reductions in point and non-point sources contributing mercury to Lake Hypo.

MERITS OF CLAIM UNDER THE RESOURCE CONSERVATION AND RECOVERY ACT

Since Friends is not pursuing a claim under the Resource Conservation and Recovery Act, Acme has not presented its case relevant to that statute. Acme's position is detailed in its written submission (Appendix E).

CONCLUSION

Due to scientific uncertainties surrounding the modelling of the increased mercury loadings allegedly attributable to Acme, it would be arbitrary and capricious for the state to deny a permit based upon the modelling. If a permit is denied, Acme is entitled to have the opportunity to argue before the Court of Appeals that such a denial is arbitrary and capricious.

PLAINTIFF – FRIENDS OF LAKE HYPO

REBUTTAL

Neil Kagan

Acme contends that Friends are bringing a collateral attack on the issuance of the air permit. The goals of the Clean Air Act and the issuance of an air permit, in this case, do not satisfy the goals of the Clean Water Act and the protection of water quality that would be achieved through an NPDES permit. In many situations more than one statute applies to a given environmental impact, for example, the Clean Water Act and the Resource Conservation and Recovery Act, or the Federal Power Act and the Clean Water Act. There is nothing inherently wrong or improper about saying that a source that emits into the air and regulated under the Clean Air Act also requires a Clean Water Act permit.

Acme contends that the U.S. Environmental Protection Agency (EPA) has interpreted atmospheric deposition to be a non-point source. A non-point source by definition is a diffuse source of pollution to a particular water body. That is not the case here, and U.S. EPA's interpretation is not relevant. U.S. EPA has never addressed a specific facility emitting pollutants into the air that are then traceable to a particular water body. U.S. EPA has never interpreted the Clean Water Act or a non-point source to mean deposition of pollution from a particular source because it is always understood that atmospheric deposition is a reference to diffuse pollution.

Acme has studiously avoided discussing the definition of the terms point source and discharge, because it is inescapable that the stack is an identifiable point source, and the modelling predicts that mercury discharged from the stack will be deposited into Lake Hypo. Friends contends that this sufficient to meet the requirements, under the Clean Water Act, of a point source.

In the Chemical Weapons case, the court rejected the claim that an emission from a stack had to be regulated under the Clean Water Act. That claim was quite different and is inapplicable here. It considered a generalized allegation that emissions from the stack would be deposited in water somewhere, and no connection had been established between the stack to any particular water body. In Acme's case, there is an identified pathway from their stack to Lake Hypo.

Acme argues that, if the court were to find the stack is a point source, then countless other sources would require regulation. Friends contends that Congress' intention was to regulate such sources under the Clean Water Act where pollution from a particular source can be traced to a particular water body. It would not apply to automobile exhausts, for example, where deposition to a particular water body cannot be established. There must be a specific connection.

The Great Waters Program is applicable to the Great Lakes, Lake Champlain, Chesapeake Bay, and coastal waters, but not Lake Hypo, and nothing in that program covers the situation in this case. The Great Waters program was meant to complement, not supplant the Clean Water Act. The Act requires U.S. EPA to advise Congress about whether changes or revisions must be made to other laws that might bear on the issue of atmospheric deposition. The Clean Water Act clearly applies to Acme – a pollutant is emitted and falls into the water and, therefore, the stack is a discharge.

This case is a question of whose vision to adopt – Acme's restrictive and backward-looking vision, or Congress' forward-looking vision which did not limit its definitions of point source or discharge but made those definitions broad and expansive so that, when events and circumstances change over the years and sources are identified that Congress may never have actually thought of in 1972, they can be regulated.

QUESTIONS AND DISCUSSION – UNITED STATES CASE STUDY

MODELS

The technical scenario was designed to provide a factual basis to explore legal tools. The use of models and the validity of their predictions are key factors. Acme and Friends agreed on what the models predicted, but Acme strongly challenged the validity of the model's predictions.

1. Was Acme attacking the models or the predictions?

Both. The modelling in the scenario was overly conservative. In addition, as both the U.S. Environmental Protection Agency (EPA) in its *Mercury Study Report to Congress* and the Science Advisory Board in its review of that report point out, there is considerable scientific uncertainty and no validated model to predict wet and dry deposition of vapor-phase compounds to a nearby water body. Therefore, one cannot rely on predictions with any degree of precision.

2. Can the model be validated, that is, its predictions agree with measured real-world conditions?

Given the current state of monitoring, it is unlikely that a study can be designed to validate a multicomponent transport, deposition, and fate model such as the one used in the scenario. The scenario is actually composed of several smaller models. These components can be validated and one can obtain a quantifiable – but large – uncertainty to the scenario's overall prediction. Real-world variability accounts for part of the uncertainty. Even if the model is not wrong and the measurements are accurate, it is unlikely that a 3% increase in mercury in fish can be measured because of environmental variability. One can either reject the model and its predictions or follow a precautionary approach and take the worst case the model predicts. However, one must be aware of the implications of adopting either extreme as a policy choice. Further, it is not appropriate for a court to make that choice.

3. What bearing do the limitations of modelling have on a judicial decision?

Questions about the validity of a model and its predictions cannot be ignored. The court's confidence or lack thereof will be significant and may be the determining factor in viewing the case in its entirety. The Acme scenario has many simplifying assumptions. In an actual case, the court would probably ask for more expert testimony regarding what to attribute as important to the model.

4. In Ontario, the proponent would use the model to support its application. Who bears the onus regarding models in the United States?

Michigan only models small sources. For larger facilities, the state asks the applicant to supply the model, perform a demonstration, and submit the results. The Michigan Department of Environmental Quality's permitting group checks to ensure that the parameters are correct, and consults with their modelling counterparts to ensure that the modelling was proper. For toxic substances such as mercury, efforts are made to ensure that such aspects as deposition to water and land are covered.

For a federal air regulation such as PSD (prevention of significant deterioration), the applicant submits the model and the output. However, mercury is not a pollutant under PSD but is covered through other mechanisms such as MACT (maximum achievable control technology) standards or risk analysis.

5. Does Acme have an alternative, preferred model?

It was not Acme's responsibility to identify a superior model. Acme contends that there is inadequate scientific information to make an accurate prediction and then base regulatory decisions on that prediction.

6. Can an example be provided where a model's prediction for mercury is or is not validated by actual environmental conditions?

Mr. Dennis Leonard provided the following illustration. The model used in U.S. EPA's Mercury Report predicted that annual atmospheric mercury concentrations would be lowest in the desert area of the U.S. southwest and highest in the industrial heartland. However, using monitoring data from the U.S. Geological Survey's (USGS) National Atmospheric Deposition Program, Mr. Leonard contended that:

- The amount of mercury deposited from global and natural sources is more than what the model predicted.
- There do not appear to be mercury deposition hotspots in the industrial heartland.
- There is no increasing west-to-east gradient, as predicted by the model.

He concluded that the model does not predict the extent that natural background sources are responsible for mercury deposition, over-predicts contributions from sources such as Acme, and shows wrong dispersion trends.

Others, however, questioned the number and geographical distribution of monitoring sites in the USGS network, for instance, only three in the west, few if any in the heartland, and none in Michigan. This could influence the perception of actual environmental conditions. Others questioned the selective use of data from only one monitoring network. Other real-world data are available that are consistent with the model's predictions.

Mr. Leonard acknowledged that the *daily* concentration of mercury can be quite variable. For that reason, he had presented *annual* flux data, because bioaccumulation has a time frame of months and years. The issue is how mercury ends up in the lake and enters and moves through the food web. The true test of a model is its ability to make regional predictions and predictions at sites not influenced by localized sources.

TOTAL MAXIMUM DAILY LOAD – MANAGEMENT IMPLICATIONS FOR PERSISTENT TOXIC SUBSTANCES

7. The TMDL (total maximum daily load) concept has been advanced for water bodies where effluent limitations required by the Clean Water Act are not adequate to achieve applicable water quality standards. Please describe the concept, its evolution since introduction as part of the Act in 1977, and its present and projected application.

Section 303 of the Act requires states to identify and establish a priority ranking for water bodies for which effluent limitations are not adequate and, for pollutants identified by the U.S. EPA Administrator, establish a TMDL which recognizes seasonal variation and reflects a reasonable margin of safety.

The TMDL concept was initially applied almost exclusively to conventional, largely waterborne pollutants such as nitrates and phosphorus. The process has evolved to now include several persistent toxic substances, among them mercury and dioxin. States have also enlarged their listing of impaired waters to include several where the presence of mercury in fish has resulted in consumption advisories, and they have made commitments to develop appropriate TMDLs. In many cases, atmospheric transport and deposition contributes a significant amount of the contamination. Thus, the atmospheric pathway is a critical element in some TMDL calculations.

As required in the Act, water bodies must be wholly within the boundaries of a single state. Almost all have a volume less than that of the smallest Great Lake. TMDLs for mercury are under development for Devil's Lake, Wisconsin and a portion of the Florida Everglades, and a TMDL for dioxin is being actively pursued for San Francisco Bay. However, the timing of state commitments to TMDL development is typically toward the year 2007.

The direct impact, if any, of the TMDL concept on persistent toxic substance management of the Great Lakes is difficult to determine. Because Lake Hypo is under a fish-consumption advisory due to mercury contamination, the TMDL requirement would have been applicable *were the lake totally within one U.S. state.* However, the Great Lakes are under multi-state and/or binational jurisdiction, suggesting further U.S. federal action as well as Canadian commitment before the TMDL concept could be applied. Nevertheless, some interplay involving the techniques applied to TMDL determinations and the evolution of Lakewide Management Plans may occur.

ALTERNATIVE LEGAL MECHANISMS

8. To establish that an air emission from a stack is a point source discharge and, therefore, requires an NPDES (National Pollutant Discharge Elimination System) permit under the Clean Water Act appears rather tortuous. Are there legal alternatives?

The legal landscape presented earlier identified and described three regulatory provisions and tools that could deal with the issue more globally and more efficiently: MACT standards for air sources and associated residual risk assessment, the Great Waters Program under the Clean Air Act, and the TMDL concept under the Clean Water Act. Additional mechanisms include:

- Preparation of a state environmental impact statement (EIS).
- Michigan, unlike many other states, does not require an EIS but does allow, in certain circumstances, for plaintiff to argue, under the Michigan Environmental Protection Act, that a particular action is polluting, impairing, or destroying a natural resource of the state.
- The principle of ARAPs – applicable or relevant and appropriate requirements – could be factored into the decision-making process for air sources. ARAPs are used in Superfund to decide clean-ups. Clean-up standards, set by the Agency for Toxic Substances and Disease Registry, use a reference dose. Therefore, one need not be concerned about discrepancies among fish-consumption advisories.
- Lawsuit against Michigan for issuing a permit without applying the Michigan Environmental Protection Act.

9. This scenario is one permit from one company for one contaminant. However, there are hundreds or thousands of companies. How do we as a society approach this reality?

A case-by-case approach is inefficient. Application of regulatory alternatives, identified above, may be preferable. In addition, flexibility rather than strict command and control would provide opportunity for innovation and inventiveness and would allow the market to determine where necessary reductions could be made most economically and efficiently. Compliance assistance is another complementary alternative. Michigan is considering, for example, 100% compliance for medical and municipal waste incinerators, with provision of major assistance in the period leading up to the compliance date and with vigorous enforcement after.

LEGAL AND PRACTICAL CONSIDERATIONS

10. Do the Clean Water Act and the Clean Air Act provide the same permit requirements on sources?

The Clean Water Act has a blanket prohibition against point-source discharges without a permit. The permit is like a gate-keeping function. In order to lawfully discharge, a point source requires an NPDES permit. The Clean Air Act has no comparable broad requirement. A source may require a PSD permit as well as a permit that incorporates MACT standards for hazardous air pollutants. Michigan has a broad requirement to the effect that a permit is required to construct, install, operate, modify, or reconstruct an emission source, but there are many exceptions, some of which are rather broad. If not excepted, a source would require a Michigan air permit.

11. Does the Clean Water Act contain any requirements for non-point sources?

When Congress wrote the Clean Water Act, it specifically chose not to include enforceable requirements, certainly no permit requirements, on non-point sources, because (1) it is more difficult to devise a regime to address non-point sources and (2) politically, non-point source control moves into the area of land-use control which, in the United States, is a zealously guarded local responsibility rather than within the domain of the federal government. Rather than directly regulate non-point sources under the Act, Congress encourages the states to act.

12. The term "discrete conveyance" is part of the definition of point source. At what point does a discrete conveyance become a diffuse conveyance? When the source is one mile, ten miles, 100 miles from the receiving water body?

Friends contends that "discrete conveyance" is not limited to a particular way that the contaminant reaches the water, nor that Congress intended such a limitation. Acme counters that the impact of air emissions on a surface water some distance away no longer qualifies as a discrete conveyance. Analysis must be on a case-by-case basis. For this scenario, a traceable connection shows that the emission from Acme's stack is predicted to have an impact on Lake Hypo. Just because there is not a discrete pipe directly into the water may not mean that the Clean Water Act does not apply.

Canadian Case Study

LAYING THE GROUNDWORK AND SETTING THE LEGAL SCENE

Under the division of powers in Canada, the environment is largely within provincial jurisdiction. Therefore, the legal scenario is structured under Ontario provincial law. In Ontario, different types of pollution sources fall under different legislative provisions. Whether a source will discharge contaminants to air or to water, or will be classified as a waste facility, and whether the proponent is a public- or a private-sector enterprise will determine the particular process requirements, rights of the parties, and criteria for decision-making on an approval application. In order to provide a realistic view of the legal provisions, the nature of the source is not identified but is assumed to be a new source of contaminants to the air, unrelated to a waste facility.

THE LEGAL LANDSCAPE IN ONTARIO

Environmental protection in Ontario is grounded in the Ontario Environmental Protection Act and the Ontario Water Resources Act, each with associated regulations. Together, sources within Ontario's boundaries are addressed through a system of permits and approvals. Primary responsibility lies with the Ontario Ministry of the Environment (MOE). Ontario MOE's business is environmental protection – clean air, water and land. Its vision is a healthy and natural environment in which water, energy and material resources are conserved and wisely used. To fulfill this vision, the Ministry sets and enforces policies and standards, assesses compliance, and develops and encourages partnerships.

Certificates of Approval

One key instrument used to protect the environment and human health is the approvals process. Under the Ontario Environmental Protection Act, a Certificate of Approval is required for the construction or installation of equipment that discharges any contaminant to the atmosphere, and also for process changes that are anticipated to result in a change in the quantity or quality of emissions. Ontario MOE issues Certificates, each of which contains conditions. It can amend an existing Certificate and impose more stringent conditions. The conditions reflect the requirements of the Act, specifically Section 9, which reads:

> "No person shall, except under and in accordance with a certificate of approval issued by the [Ontario MOE] Director,
>
> (a) construct, alter, extend or replace any plant, structure, equipment, apparatus, mechanism or thing that may discharge or from which may be discharged a contaminant into any part of the natural environment other than water; or
>
> (b) alter a process or rate of production with the result that a contaminant may be discharged into any part of the natural environment other than water or the rate or manner of discharge of a contaminant into any part of the natural environment other than water may be altered."

Section 14 contains the prohibition:

> "Despite any other provision of this Act or the regulations, no person shall discharge a contaminant or cause or permit the discharge of a contaminant into the natural environment that causes or is likely to cause an adverse effect."

An adverse effect is broadly defined as impairment of the natural environment; injury or damage to property, plants or animals; material discomforts and loss of enjoyment. Section 14 also provides for enforcement.

Regulation 346, developed under the Ontario Environmental Protection Act, deals specifically with air contaminants. Through Regulation 346, limits for specific contaminants are set as a concentration at the point of impingement. Dispersion models are used and aggregate emissions accounted for.

The approvals process is being streamlined. Among the reforms are:

- Exemption regulations, effective September 30, 1998, provide unconditional exemption from a Certificate of Approval for certain environmentally insignificant activities. Virtually every emission to the environment from a fixed source requires approval but many, such as vents, are insignificant.
- Standardized approvals regulations, presently under development, will focus on activities with predictable, easily controlled impacts and will provide a conditional exemption from a Certificate with regulatory requirements.

Other Legal Provisions

The Ontario Water Resources Act contains a general provision against discharge without a permit of any substance that may impair water quality. A source requires a Certificate of Approval and, if the source were in a sector covered by the MISA (Municipal-Industrial Strategy for Abatement) regulations, would have to meet those requirements as well.

The Ontario Environmental Protection Act and the Ontario Water Resources Act contain provisions in addition to a Certificate of Approval process. For example, to prevent adverse effects, the Director can issue an order to an existing source to reduce emissions. This is useful in cases where adverse effects are being monitored and action needs to be taken. To control any or all emissions, Ontario MOE has extensive regulation-making powers; the MISA regulations for water discharges are an example.

The Environmental Bill of Rights adds checks and balances. The Bill of Rights required Ontario MOE to develop a Statement of Environmental Values. The Statement includes the proposition that any new legislation and subsequent approvals be based on an ecosystem approach. The Statement has been filed with the Environmental Commissioner, an independent watchdog.

Under the Environmental Bill of Rights, citizens of Ontario can take a direct role. They can make specific requests to the Minister of the Environment to investigate an existing pollution problem, for instance, a discharge that appears to be unregulated. Citizens can also ask the Minister to review existing legislation, regulations, or policies and amend, revoke, or replace them with better ones. This tool requires a written submission by two or more citizens. It has, as yet, not been used extensively, but this is expected to change as people become more acquainted with it.

Prior to the Environmental Bill of Rights, only the recipient of a Certificate of Approval could appeal its provisions. Now citizens of Ontario may apply to the Ontario Environmental Appeal Board for leave to appeal. The threshold for granting permission is whether the decision to issue the Certificate was, for example, one that no reasonable person, having regard to relevant law and policy, would have made, and the decision would create the risk of significant environmental harm. This creates a checks-and-balance situation, since the applicant can appeal the Director's decision on the one hand, and others can seek leave to appeal on the other. The overall process has thus changed and, as it develops momentum, could yield further improvements.

APPLICATION OF THE ONTARIO LEGAL FRAMEWORK TO THE SCENARIO

Overview

Under Section 9 of the Ontario Environmental Protection Act, a new source applies to the Director for a Certificate of Approval. Under the Environmental Bill of Rights, Ontario MOE posts notice of the application for a minimum of 30 days for public comment. Simultaneously, the proposal undergoes technical review by Ontario MOE personnel. Regulation 346 is one of the tools used. After completion of the technical review and the close of the public comment period, the Director considers all information received and decides whether to approve the request – as submitted or with conditions – and issue a Certificate of Approval or to deny the request.

After the Director notifies the proponent of his decision, the proponent has 15 days from the date of receipt to appeal the decision. A decision to appeal triggers an Ontario Environmental Appeal Board hearing, to which the Director and the proponent are automatic parties. The Board must grant status for others, such as an environmental non-government organization (ENGO), to intervene.

Under the Environmental Bill of Rights, the Director's decision is also posted. An ENGO or member of the public has 15 days from the date of posting to ask the Board for leave to appeal the Director's decision. Leave can only be granted in very limited circumstances:

- Where a person has an "interest" in the decision, AND
- There is good reason to believe that "no reasonable person, having regard to the relevant law and to any government policies developed to guide decisions of that kind, could have made the decision," AND
- The decision could result in significant harm to the environment.

Generally, the Board will grant intervener status to people who may be affected by the proponent's activities and to ENGOs that can demonstrate a track record of involvement in the environmental issues raised by the proponent's application. However, only the Director and the applicant are guaranteed a place at the table.

Usually an Ontario Environmental Appeal Board hearing is before a single member. The Board has the same authority as the Director and sits in place of the Director, whose decision is under appeal. Based on the evidence and submissions heard from the parties, the Board decides whether to impose, modify, or revoke the condition, or to take a completely different approach to the issue. A Board decision can be appealed to the divisional court on a question of law, and to the Minister of the Environment on policy-related issues.

Acme Widget

For this scenario, the Ontario MOE Director has issued a Certificate of Approval to Acme Widget, a new source located near Lake Hypo. The Director considered not only the concentration of mercury predicted by the Regulation 346 model but also the subsequent uptake and bioaccumulation in fish. The Certificate acknowledges the emission of mercury from Acme and its subsequent deposition to Lake Hypo. Because mercury is a persistent bioaccumulative toxic substance, the technical review process provided the necessary close scrutiny. To protect human health from the adverse consequences of mercury deposition to the lake and subsequent uptake and bioaccumulation in fish, the Certificate contains a condition requiring Acme to meet a limit more stringent than the standard in Regulation 346. The condition is:

> The operator shall ensure that the mercury emission rate does not exceed 11 grams per hour.

The Director's rationale for imposing the more stringent condition is that:

> Mercury is a persistent toxic substance that bioaccumulates. The facility is located near Lake Hypo. Mercury will be deposited in the lake from the facility's air emissions. Best available technology can control the emission rate to less than 11 g/hour. It is appropriate to limit the emission rate to protect life in the lake and the health of humans who may consume fish from the lake.

Acme had asked for approval to release mercury to the environment at a rate of 21.2 grams per hour. The Director approved a limit of 11 g/hour, and the ENGO, Friends of Lake Hypo, wants zero discharge. Acme appeals the condition and Friends is granted intervention status.

THE APPLICANT'S SUBMISSION

TO THE ONTARIO ENVIRONMENTAL APPEAL BOARD[5]

John L. Martin

Acme Widget will manufacture devices for use in cardiac cases for both adults and children. The state-of-the-art facility will be located in a community that needs jobs, and the government provided, or could provide assistance for the company to locate there.

The only hazardous material associated with the manufacturing process is mercury. Some mercury is present in the stack emission. However, Acme is an environmentally sensitive company and will use proven technology to reduce emissions as much as possible, not only to protect the environment but also because of the economic savings of re-using the captured mercury. If better economically achievable technology becomes available, the Ontario Ministry of the Environment (MOE) can, through Section 9 of the Ontario Environmental Protection Act, revisit the Certificate of Approval and impose a more stringent requirement, which Acme will gladly accept.

Acme is appealing the Ontario MOE Director's decision to impose a more stringent condition on three grounds.

DOES THE DIRECTOR HAVE AUTHORITY TO IMPOSE A CONDITION?

Section 9 stipulates that all emitters of a contaminant into the natural environment *other than water* require a Certificate of Approval. The more stringent condition in Acme's certificate is designed to control the deposit of mercury into the water of Lake Hypo. Since the applicant is not required to obtain an air approval for contaminant emissions into water, the Director cannot impose the condition.

Legislative loopholes are never intended, but are often there. With respect to this case, Acme submits that it is the proper role of the Ontario Environmental Appeal Board to advise the legislature that, if it was their intention to control atmospheric deposition into water through Section 9, they do so clearly and modify the Act.

HAS ACME MET LEGAL REQUIREMENTS?

The Director may impose a condition if it is necessary to ensure that plant operation will comply with the Act and regulations. Regulation 346 requires the release to meet the standards set out in the regulation. The only legal requirement with respect to mercury is a health-based maximum half-hour point-of-impingement concentration of 5 $\mu g/m^3$. The applicant used the Regulation 346 dispersion model to confirm that the release would be only 1/500th of the standard.

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[5] Full brief – Appendix F.

In reviewing air emission applications, Ontario MOE also considered a health-based one-hour ambient air quality criterion of 2 $\mu g/m^3$. The applicant used the U.S. Environmental Protection Agency's (EPA) SCREEN3 dispersion model, which Ontario MOE also uses, and obtained a result of 0.017 $\mu g/m^3$, less than 1/100th of the value set by Ontario MOE. Thus, the applicant is also able to meet this criterion.

Ontario MOE has no general stack emission concentration criteria or guidelines for mercury but, in 1996, adopted Guideline A-7 specific for new or expanded municipal waste incinerators in Ontario. The proposed guideline went through a rigorous public consultation process and, in response to the comments received, changes were made prior to adoption of a mercury emission guideline of 57 $\mu g/m^3$. Using the emission characteristics for Acme, one can calculate that the 21.2 g/hour emission value is comparable to 53.4 $\mu g/m^3$. Thus, Acme would meet this requirement as well, and Ontario MOE wishes to reduce the 21.2 g/hour value down to 11 g/hour.

DOES THE DIRECTOR HAVE PROBABLE GROUNDS TO PREVENT OR ALLEVIATE AN ADVERSE EFFECT?

The Director may refuse to issue a Certificate or may attach terms and conditions considered necessary to regulate contaminant release if there are probable grounds to prevent or alleviate an adverse effect, as defined in the Act. There are two key points – *on probable grounds* and *to prevent or alleviate.* The Act does not say *may* prevent or *may* alleviate. Probable grounds do not relate to the possibility of an adverse effect.

Because of the present state of the science, models must be used to connect the emission of mercury from Acme's stack to the potential for mercury ingestion by humans, including models for air dispersion, deposition into the water, and methylation. Because of the concern about mercury, a conservative stance must be used when applying models. However, there is a danger with the compound use of models as in this case. Testimony has amply shown that the safety factors are into the thousands.

One major assumption is that methyl mercury production and bioaccumulation is the same in all ecosystems. In U.S. EPA's *Mercury Study Report to Congress*, the variability in mercury methylation among ecosystems was neglected because of the difficulties in modelling this process. Methyl mercury does not constitute the same fraction of total mercury in sediment, soil, and water across all ecosystems. Methylation varies among ecosystems by many orders of magnitude.

Because of the error associated with fate, transport, exposure and other models, wildlife criteria cannot be predicted within two or three orders of error. When the uncertainty associated with methylation is factored in, clearly the Director does not have probable grounds to impose a condition to prevent or alleviate an adverse effect. The proposed condition would reduce emissions by one half, but the built-in safety factors are many, many times more than that.

According to Paragraph 58, Ontario MOE, when making decisions, will consider cumulative effects on the environment, the interdependence of air, land, water, and living organisms and the interactions among the environment, economy, and society. Acme submits that the Director, when setting the condition in the Certificate of Approval, failed to consider economy and society.

CONCLUSION

Acme asks the Ontario Environmental Appeal Board to consider the evidence and agree that this applied control technology is the best available and, on balancing between environmental consequences and the economy and society in general and the benefits of this project in particular, that the Director and, now, this Board, impose a condition of 21.2 rather than 11 g/hour for mercury.

THE DIRECTOR'S SUBMISSION TO THE ONTARIO ENVIRONMENTAL APPEAL BOARD[6]

Pat Moran

Acme Widget has appealed the decision of the Ontario Ministry of the Environment Director to impose a more stringent condition for three reasons:

- The Director has no legal authority to impose conditions.
- Acme's proposal meets all legal requirements of the Act and Regulation 346.
- The Director does not have probable grounds for imposing the mercury emission limit to prevent or alleviate an adverse effect.

The rationale for the Director's decision is laid out below.

LEGAL AUTHORITY

Section 9 of the Ontario Environmental Protection Act states that no person, except in accordance with a Certificate of Approval, shall construct a plant from which may discharge a contaminant into any part of the natural environment ***other than water***. Acme contends that the Director is dealing with a water discharge.

Clearly, the release is going into the air, but the Director has taken into consideration that, once the mercury is in the air, there are a number of potential effects, one of which is deposition into water. The mercury added to Lake Hypo will accumulate and eventually cause health problems.

The Ontario Water Resources Act, which predates the Ontario Environmental Protection Act, was enacted to deal with municipal and industrial discharges directly into the waters of lakes and rivers. The phrase "other than water" was added to Section 9 of the Ontario Environmental Protection Act to distinguish air approvals from all other approvals, thereby eliminating the double jeopardy of a proposed facility having to obtain two approvals for the same discharge. The wording of Section 9 was never intended to preclude or limit the Director's ability to deal with air discharges.

If Acme is correct, that the Director is trying to control a water discharge and therefore does not have authority, then one can conclude that there is no way for the province to control air emissions in order to prevent adverse effects, regardless of where they occur, including water, land, or uptake by animals and humans. The legislature did not intend to create a huge loophole in the Section 9 approval process.

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[6] Full brief – Appendix G.

The Board is in a position to agree with the Director, that he is dealing with an air issue and is therefore entitled to control that air discharge.

COMPLIANCE WITH LEGAL REQUIREMENTS

The Director agrees that Acme will meet all legal requirements of the Act and Regulation 346. However, the Director contends that the requirement of Regulation 346 is a starting point, not the end point. In his decision to impose a more stringent condition, he took into consideration the total mercury loading to Lake Hypo. Regulation 346 considers only what one source will emit. It does not take into account the mercury already in the environment, nor other sources nor their plumes.

Guideline A-7, which establishes mercury emission rates for new and expanded municipal waste incinerators, is not a legal limit and does not apply to Acme. It is intended to assist the Director and the Board in reaching decisions. In reaching his decision regarding Acme, the Director went beyond the guideline in order to protect the environment, based on local circumstances.

PROBABLE GROUNDS

That mercury accumulates through the food web and poses a threat to human and ecosystem health is clear. Acme contends that its 9 kg contribution is small, compared to the 328 kg contribution via the Hypo River from upstream sources, and that Ontario should address sources contributing to that total. Ontario's MISA (Municipal-Industrial Strategy for Abatement) program is dealing with those sources so that the annual upstream loading will decrease with time. From another perspective, Acme's proposed annual mercury release will double the present atmospheric loading to Lake Hypo.

The Director agrees that Acme will apply best available technology to control stack emissions. The Director contends, however, that Acme should also review its production process and make improvements to reduce the amount of mercury to be dealt with through post-process stack controls. Acme knows its production process and is best suited to determine what improvements are most appropriate to meet the Director's 11 g/hour condition. The Board is in a position to uphold the limit imposed by the Director and continue to reinforce the proposition that mercury has to be phased out, striving toward a goal of zero discharge.

THE INTERVENER'S SUBMISSION

The arguments presented by Friends of Lake Hypo are similar to those of the Director, the difference being their desire for zero discharge. Since the Director is not opposed to Friends' arguments, no commentary is necessary.

THE INTERVENER'S SUBMISSION TO THE ONTARIO ENVIRONMENTAL APPEAL BOARD[7]

Paul Muldoon and Marcia Valiante

ROLE OF THE INTERVENER

The intervener represents a constituency. The intervener's role, especially in administrative tribunals, is to push the policy envelope, introduce terms, conditions, and concepts to the limits of the Board's tolerance. Some have accused the intervener of being naive for such suggestions, but this role is not trivial. A review of the history of Canadian tribunals and courts shows that many views, once considered very progressive, ambitious, if not naive are now part of accepted law. For example:

- The proposal to ban chlorofluorocarbons was initially outrageous, unacceptable, and radical, but culminated in the Montréal Protocol.
- The proposal to reduce organochlorines from pulp and paper operations by more than 90% was initially radical, naive, and wild-eyed, but was adopted by the Canadian federal government and led to regulations.

The Ontario Environmental Appeal Board has a legal responsibility and duty to decide on the law. However, the present case is more than the consideration of jurisdictional authority under Section 9 of the Ontario Environmental Protection Act and application of strict legal principles. The case raises vital questions about gaps and challenges facing the Canadian environmental law and policy regime. The Board must also consider the goal of virtual elimination and ensure that the regulatory strategies advanced are in the philosophy of zero discharge. Friends of Lake Hypo suggests that application of the precautionary principle is now part of the legal and policy framework of the province of Ontario. To protect its clients, it must ask, how does Ontario's regulatory system:

- accommodate scientific uncertainty?
- account for cumulative effects?
- seek to protect the most sensitive populations?
- seek to advance technology and innovation?
- seek to deal with toxic substances which have no safe threshold?

FRIENDS' POSITION – ZERO DISCHARGE

Acme Widget requested approval to release mercury at a rate of 21.2 grams/hour, but the Ontario Ministry of the Environment (MOE) Director issued a Certificate of Approval with a condition of 11 grams/hour, which Acme contends is too onerous. Friends contends that the condition is not strong enough. Since mercury is a persistent toxic substance that bioaccumulates in the food chain and adversely affects human health, the Ontario Environmental Appeal Board must take the most stringent regulatory action that the law allows and impose zero discharge. To justify this position, consider the following.

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[7] Full brief – Appendix H.

- Mercury is a persistent toxic substance that bioaccumulates in the food chain. Certain populations such as aboriginal people and other subsistence fishers are at higher risk because of their heavy reliance on fish as a source of food.
- Friends' clients, the Hypo First Nation, an aboriginal community located on the delta of Hypo River where it enters Lake Hypo, is heavily dependent on area wildlife and fish in Lake Hypo as food. Unless a zero discharge standard is imposed, the Board is penalizing the Hypo First Nation for living off the land.
- Mercury adversely affects the nervous system, sensory motor function, and human and wildlife reproduction. Even at very low doses where the mother shows no or only mild symptoms, adverse impacts are manifested in offspring. The offspring of mothers who regularly consume wildlife predators at the top of the food chain are the most vulnerable. Because of the particular sensitivity of the human fetus to mercury, Canada and the United States have severely restricted the consumption of fish containing mercury by pregnant women, women of childbearing age, and children.
- There is no evidence that human residues of mercury are declining; therefore, all exposure pathways should be addressed.
- During the public notice period for this permit, 450 responses were submitted. The issue is controversial, emotional, and media-heightened, factors that have not been captured in the Board's deliberations.

DOES THE DIRECTOR HAVE AUTHORITY TO IMPOSE A CONDITION?

Friends adopts the Director's submission that the Board has jurisdiction under Section 9, and that there is no impediment to impose a condition on an air permit that affects water, wildlife, and public health. This decision is well founded in case law, logic, and statutory interpretation. Acme's position regarding Section 9 ignores the fact that all ecosystem components are interconnected and would not allow the Director to protect one component of the environment.

DOES THE BOARD HAVE AUTHORITY TO IMPOSE A MORE STRINGENT CONDITION?

Acme contends that its requested condition is as stringent or better than what the law requires. Friends contends that the regulations are a floor and not a barrier against a more stringent condition. Friends contends that the Board and the Director clearly have authority, as shown in prior cases, to impose a more stringent condition, and the ceiling is at the Board's discretion.

Acme challenges whether the models used will provide answers. Friends contends that the Regulation 346 model, which provides the basis for the point-of-impingement regulatory standard for mercury, is seriously inadequate and its nuances should not be debated. An Ontario MOE critique of Regulation 346 models states:

> "Dispersion models are outdated and do not consider all adverse meteorological conditions or lakeshore effects. ... The regulation does not directly limit the persistent toxic emission loadings to the environment. ... The combined effects of multiple emission sources are not addressed."

The model does not accommodate what is, in effect, an attempt to allocate the capacity of Lake Hypo to accept mercury, a contaminant for which there is no safe threshold. The model deals with only one source – Acme – and fails when there are several facilities all emitting the accepted amount of mercury.

The standard does not address the accumulative or persistent nature of the contaminant or short- or long-term effects. Further, the standard fails to take into account long-range atmospheric contaminant transport, long-term deposition, or additive or synergistic effects of multiple sources. Because the model is deficient and the standard inadequate, the Director and the Board have ample reason to impose a more stringent condition.

PROBABLE GROUNDS TO PREVENT OR ALLEVIATE AN ADVERSE EFFECT

Friends contends that there are probable grounds to enact a more stringent standard and that the probable grounds will meet the standard of proof of Section 9. Friends' interpretation of Section 9 is that one has to be convinced that there are probable grounds for an adverse effect to happen. Given its inherent characteristics, mercury will, over time, invariably cause some adverse effect. The question is when and to whom.

In a previous case, the Board indicated that it is open to evidence that emissions, at a level that complies with numerical standards, are capable of causing adverse effects. In other words, Friends submits that it need only demonstrate that mercury emissions from Acme are capable of causing an adverse effect. Friends believes that the evidence before the Board shows that mercury can cause harm even at the regulatory level that is set.

In addition, the courts have said that impairment can be taken to include cumulative impact on the environment, such as when the addition of a substance to a lake would not cause immediate harm but would delay recovery from prior pollution.

THE BOARD'S OBLIGATIONS – THE BROADER POLICY AND LEGAL CONTEXT

Because of its devastating human and environmental effects, a large number of international and governmental institutions have targeted mercury for drastic reduction and elimination. Therefore, the Board has a responsibility not only to apply Section 9 of the Ontario Environmental Protection Act but also to respond in the larger policy and legal context. Among the institutions promoting virtual elimination are:

- The federal Canadian Environmental Protection Act sets national policy for pollution prevention and virtual elimination of designated substances.
- Canada-wide standards for mercury are being developed under the auspices of the Canadian Council of Ministers of the Environment.
- The Commission for Environmental Cooperation has a goal to prevent or minimize anthropogenic inputs of mercury to the environment, specifically, that ambient mercury levels should approach natural background levels and human releases should be reduced until naturally occurring levels are achieved.
- The Great Lakes Water Quality Agreement established a goal of virtual elimination for inputs of persistent toxic substances. Annex 12 requires the design of regulatory strategies in the philosophy of zero discharge. Unless these commitments are translated to this hearing, the Agreement has no meaning.
- Through the Great Lakes Binational Toxics Strategy, the governments of Canada and the United States have committed to finish the business of virtual elimination.
- The Canada-Ontario Agreement seeks to implement the international Agreement and to buttress the Binational Strategy goal to reduce the use, generation, and release of mercury by 90% by the year 2000. The Minister of the Environment has confirmed Ontario's commitment to this goal.
- The International Joint Commission has recognized and applied the concept of zero discharge and virtual elimination. The report of the Commission's Virtual Elimination Task Force provides enormous insight on how to apply the vague concept of virtual elimination to the specific issue of mercury.

Governments have committed to virtually eliminate mercury releases, but every increase, no matter how small, works against that commitment. These and many other policies and legal commitments can only be incorporated when they are translated into proceedings such as the one before this Board. The commitment can only be accomplished through imposition of a zero discharge standard in this present case.

UNCERTAINTY AND PRECAUTION

Friends represents Needyville, whose citizens are concerned about the quality of their environment. Their government, the province of Ontario, has committed to a policy of virtual elimination. This policy is implemented through the Board, the Director, and other environmental decision-makers in Ontario. However, that commitment is not reflected in the Certificate of Approval issued to Acme Widget.

Friends submits that the Board should take a quite different view from what Ontario MOE and Acme suggested. In Friends' view, if the science were certain, that there is no threshold limit for mercury and the models are accurate, the Board and the Director would, without question, have imposed virtual elimination as a condition in the Certificate. However, there are uncertainties in all parameters – the quantity of mercury emitted, dispersion, deposition, food web accumulation, metabolism. The issue is too complex to trace a given mercury molecule into a particular fisher. There will never be 100% certainty about the impacts of mercury, and the Board will have no more certainty than it has now.

The traditional tort model of environmental regulation in Canada is that a source operates under the presumption that it is not causing harm until proven otherwise. Acme argues that it is the responsibility of governments to develop certainty and that it should be allowed to operate until government decision-makers say stop. Acme argues that it is better than the standard and should not bear the burden of uncertainty, for economic reasons. Acme offers the benefit of jobs. It does not have to be certain, but relies on uncertainty and reaps the advantage.

Friends submits that, in the context of a persistent, bioaccumulative toxic substance like mercury, this decision-making model is outmoded. It is unfair and unjust to make aboriginal people, women and their babies, children, fish, and wildlife bear the burden of scientific uncertainty. Lake Hypo is already burdened, as evidenced by fish-consumption advisories on both the U.S. and Canadian sides of the lake. Acme is asking for dispensation, the right to add to that burden. The effect of that mercury will be dramatic and irreversible.

The Board must not choose between jobs and the environment. A productive economy and a clean environment go hand in hand. If the environment is impaired, society will not have a quality economy, either. When faced with serious or irreversible environmental degradation, uncertainty should be resolved in favor of the environment. Friends submits that the Board is faced with serious and irreversible environmental degradation by Acme's application. Some suggest that the hourly input of mercury to Lake Hypo is minuscule, but 9 kg per year for 25 - 30 years is a lot to add to an already burdened ecosystem.

Friends asks the Board to take a precautionary approach. The precautionary principle has been developed in international environmental law and adopted in numerous international instruments, most notably the 1992 Rio Declaration of the United Nations Conference on Environment and Development. Principle 15 states:

> "In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation."

The precautionary principle is also associated with other principles of international law, such as sustainable development and the concept of inter-generational equity, where one does not compromise the ability of future generations to live in a quality environment. The common theme is justice and equity, both within and between generations.

The principles of justice operate in this case before the Board. Because of economic, social, and environmental conditions, Needyville's citizens are some of the most vulnerable, the most at risk, in terms of their health. The links are not clear, and Friends does not suggest that the cause is mercury but, because of the stresses existing in the community, these people are vulnerable.

Canada champions the precautionary principle at the international level, and it is becoming a common part of Canadian domestic law. The essence of the principle, as articulated in the Rio Declaration, was included in the Canadian Environmental Protection Act. The precautionary principle is also a fundamental tenet of the federal-provincial Harmonization Accord, signed by Ontario, which provides binding legal commitments for cooperative implementation.

Friends cites a number of cases in its brief from tribunals across Canada that have adopted the precautionary approach in decisions. This Board, in an earlier decision in the Uniroyal case, made choices based on precaution.

More specific to Ontario MOE, the Environmental Bill of Rights provides statutory grounding to the effect that the Minister – and presumably his delegates – shall take every reasonable step to ensure that Ontario MOE's Statement of Environmental Values is considered whenever they take decisions that might significantly affect the environment. Friends contends that the Director did not consider the Statement of Environmental Values in his decision regarding Acme. The Board, with the authority to exercise any power that the Director has, should now apply the Statement, with consideration to the following.

- **Application of the ecosystem approach.** The Statement of Environmental Values indicates that, when making decisions, Ontario MOE will consider cumulative effects on the environment, the interdependence of air, land, water, and living organisms and the inter-relationships among the environment, the economy, and society. Acme singled out the economy as most important, but Friends suggests that the factors are a seamless web and the balance among them is most important, and that the Board consider all.

- **Application of the precautionary principle.** The Statement says that Ontario MOE will exercise a precautionary approach in its decision-making, especially when there is uncertainty about the risk presented by particular pollutants. Friends suggests that persistent toxic substances are at the top of list. To exercise caution in favor of the environment conveys that environmental protection is more important than the economy and Acme turning a profit on the back of the community.

- **Impact on First Nations.** The Statement says that Ontario MOE will promote and implement the principles of a Statement of Political Relationship, which deals with the political status of First Nations. Within that context, Ontario MOE will evaluate the impact of proposed decisions on First Nations and aboriginal communities. Friends suggests that, in evaluating Acme's application, this was not done. In determining the numerical limit as the condition in the Certificate of Approval, the Director took an across-the-board approach but did not account for the particular vulnerability of the community that will be directly impacted.

- **Priority.** The Statement says that Ontario MOE's environmental protection strategy will place priority first on preventing and, second, on minimizing the creation of pollutants that can damage the environment and that, when the creation of pollutants cannot be avoided, the priority will be, first, to prevent their release and, second, to minimize their release. Friends suggests that the Director did not consider how to prevent or minimize the creation of mercury in Acme's process and how to prevent its release.

Failure of the Board to consider the precautionary principle in imposing a condition on Acme would constitute a failure to fulfill the requirements of the Environmental Bill of Rights, as well as a failure to fulfill the purpose of the Ontario Environmental Protection Act itself, to protect and conserve the natural environment of Ontario.

The precautionary principle applies in this case. There are uncertainties about mercury but enough is known about its impact on human and ecosystem health. Every government on this continent and most around the world have said mercury should approach naturally occurring levels and that all anthropogenic sources should be eliminated. The appropriate response of this Board is caution, and to resolve uncertainty in favor of the environment and human health. If potential effects are more severe, the consequences will be serious and irreversible.

In its Statement of Environmental Values, Ontario MOE has already identified the appropriate response for this Board – place pollution prevention as the first priority. Friends submits that the Director did not ask Acme why mercury was in its process or how the process or product could be changed to prevent its presence at all or, if mercury must be created, given the importance of the widget being manufactured, how its release could be prevented entirely. Acme presented no evidence to suggest that pollution prevention was considered, or that pollution prevention would be cost prohibitive. In fact, evidence indicates that introduction of pollution prevention generally makes companies more competitive and improves their bottom line.

Ontario MOE promised the citizens of Ontario a clean air program almost 15 years ago that, like the MISA (Municipal-Industrial Strategy for Abatement) program for point source discharges to water, would have adopted virtual elimination of persistent toxic substances in its regulations. The failure to do so does not preclude this Board from going beyond the basic requirements of Regulation 346.

SUMMARY

Friends submits that:

- The Board has jurisdiction to impose a zero discharge condition, when necessary, to prevent a source from causing an adverse effect.
- There are sufficient grounds in this case to do so.
- Ontario has committed to the principles of precaution, pollution prevention, and virtual elimination through signed agreements and the incorporation of the principles into its policy and legal instruments.
- The Ontario Environmental Protection Act is sufficiently flexible to allow the Director and the Board to require implementation of these policies in individual applications, such as Acme's.

QUESTIONS AND DISCUSSION – CANADIAN CASE STUDY

LEGAL AUTHORITY

1. Section 9 of the Ontario Environmental Protection Act refers to discharge into any part of the natural environment *other than water*. This raises a fundamental question about the jurisdiction of Section 9. How realistic is the argument that a Certificate of Approval cannot address any problem in water as a result of a release to the air?

This potential issue has not been challenged in a time span of more than two decades. If a challenge were raised and the case ended up in court, the Ontario Ministry of the Environment (MOE) has a high level of confidence that the challenge would fail. The court tends to take a purposeful, rather than a technical approach to interpretation. The aim is to reinforce delivery of such a social welfare measure rather than to erect barriers. Nonetheless, many people would feel more comfortable if there were language in Section 9 to clarify that point.

This scenario was highly structured, with one contaminant from one source to one water body. A real case would have been much broader. For instance, the Ontario MOE Director's condition would include rationale related to air and land in addition to water, for example, land deposition of contaminants followed by transport to the lake.

REGULATIONS

2. Do Ontario's air regulations contain specific limits for specific contaminants?

Yes and no. The air regulation numbers date from 1965 and originally covered 100 contaminants. That number is now 87. The other 13 were removed from the list primarily because the limits were above what was considered safe, as determined from more recent science. However, agreement has not been reached on new numbers, in part because ambient concentrations are above levels known to cause adverse effects. The need in these cases is not so much for a number than for elimination.

Through Ontario MOE's Clean Air Program, new lists of contaminants with lower numbers were proposed in 1986-87. These are still under discussion, reflecting the challenge to transform policy decisions into law. An August 1998 list covers 200+ contaminants, and numbers are incorporated into Certificates of Approval on an ad hoc basis.

GEOGRAPHIC LOCATION

3. Is plant location a consideration? For example, if a determination were made that a plant would have a large impact on a lake if located on the shoreline but a small impact if inland, would a decision to locate the plant inland be construed as pollution prevention?

Location is not a consideration under the Ontario Environmental Protection Act. Ontario MOE considers only what is proposed to be done at the site selected, who will be affected and, if so, by how *much*. If there were sufficient public controversy, the Ontario Minister of the Environment could conclude the need for an environmental assessment, including assessment of sites, under provisions of the Ontario Environmental Assessment Act. Sources such as waste management facilities, landfills, and energy-from-waste facilities would go through that process, but not a facility like Acme.

In designing the scenario, the organizers rejected placing Acme under the Ontario Environmental Assessment Act. The myriad additional variables would have diverted focus from the original question.

MODELS

4. What are the capacities of Ontario's Regulation 346 model in determining ambient air concentrations or deposition?

This dispersion model has been part of Regulation 346 for almost 30 years. More advanced models have subsequently emerged and are typically used by Ontario MOE and others to quantitatively estimate the impact of particular pollutant emissions. The Regulation 346 model is unsuited to this application, given Acme's location near the shoreline and with other mercury sources in the vicinity. Ontario MOE has indicated its intent to revise portions of this regulation, including the model, but has not yet done so.

BALANCE

5. The point was made that the Ontario MOE Director and the Ontario Environmental Appeal Board should consider both environmental and economic factors in making decisions. Would an already existing source, that is, one contributing to the economy, be treated differently from a proposed new source?

Ontario legislation makes no distinction and Ontario MOE has actively addressed existing sources with a strong presence in the economy. For instance, Ontario MOE issued a generic order requiring all kraft pulp mills to reduce aqueous contaminant discharges down to specified levels. Also, the MISA (Municipal-Industrial Strategy for Abatement) program was developed and implemented to deal with a range of municipal and industrial sources. Further, under the Environmental Bill of Rights, the Ontario Minister of the Environment is obligated, upon written request from any two Ontario citizens, to review the permit for an existing facility. When an existing air source requests a major amendment to its permit, Ontario MOE routinely requires the applicant to provide emissions inventory information for use in decision-making.

6. What are the respective roles of law, policy, and principle, and which prevails in achieving a balance?

All sources in Ontario have to meet regulations, which are grounded in law. There are specific rules to interpret the language in the regulations, and one can also refer to previous cases for interpretation.

Ontario is also committed to general principles, such as the Statement of Environmental Values. The challenge is how to apply the principles. The law requires the government to consider or factor these principles into its decisions. Interpretation can be either broad or narrow.

Policies have been adopted into various legal documents such as the Canada-Ontario Agreement and the Great Lakes Water Quality Agreement. As a signatory to the former, Ontario is legally bound to implement its provisions.

ZERO DISCHARGE

7. Why would the Ontario MOE Director not impose a condition of zero discharge?

Zero discharge hinges very much on the availability of appropriate production and control technology. The prevailing view with Ontario's approvals process is that, if affordable technology is available to meet a limit, a company should use it, especially for a contaminant like mercury. Generally, technology questions would be discussed between the applicant and Ontario MOE, and possibly with the intervener, and those questions largely settled before the case came to the Ontario Environmental Appeal Board.

The province's strategy to reach the zero discharge goal is to ratchet limits down bit by bit, availing itself of opportunities such as when a Certificate holder seeks Ontario MOE approval to add new equipment. By tightening up on limits and challenging sources to look at production processes rather than just end-of-pipe controls, Ontario MOE leverages the process toward zero discharge. With most process improvements, the company's economic bottom line is also improved.

8. Acme's proposal would double the atmospheric deposition of mercury to Lake Hypo. The Ontario MOE Director's condition would increase the loading by 50%. Is this not contrary to a goal of zero discharge?

Ontario MOE favors a staged approach to reducing overall discharges. This includes ensuring that the newest sources come on line with best available technology (BAT). This process may result in a temporary increase in overall loadings, but it does not punish newer companies that want to introduce BAT.

Existing sources likely are not using BAT. Ontario MOE can review their Certificates and ask them to incorporate new technology, thereby reducing their loadings. Ontario MOE can also issue an order and unilaterally amend a company's Certificate. Rather than a systematic review of all Certificates for all contaminants, Ontario MOE follows a case-by-case approach, exploring ways for broad application of new technology as that technology becomes available.

It is easier to persuade older sources to adopt BAT that is proven and in use by newer sources. There is no set time line. Each Certificate is handled individually, based on review of an application and consultation with the company. This approach facilitates consideration of such factors as the cost of the technology, challenges of installation, and testing to ensure full equipment operation.

9. In advocating zero discharge, is the intervener arguing that the facility should not be built, regardless of the product manufactured?

The debate centres on pollution prevention. The rationale behind the Ontario MOE Director's condition was to encourage the company to look at production processes in addition to end-of-pipe control. The intervener could strengthen that position by introducing evidence that other processes could manufacture the product and avoid the use or creation of mercury. Setting the condition below what control technology can deliver encourages innovation. The company can still operate, but with different processes and materials, and the environment benefits. This also provides a lever, through the Certificate of Approval process, to apply tighter limits on other existing sources.

VIRTUAL ELIMINATION

10. A virtual elimination policy was incorporated into the Great Lakes Water Quality Agreement more than 20 years ago. How realistic is this policy in light of a large number of facilities seeking allowable releases?

The need for virtual elimination or other limits, such as the assimilation capacity of a particular water body for a particular contaminant, may come to be recognized only after an extended period of time. A case-by-case approach functions in a changing landscape and may be unfair to applicants, who have business decisions to make. They need to know up front what the requirements are and not have unexpected changes imposed later. Clearly, the process is complex and other factors, including political realities, must be considered. At some point, decisions are required at the ministerial, cabinet, or legislative level.

The Canadian Council of Ministers of the Environment are addressing a number of contaminants, taking into account technological, environmental, and economic factors. If they develop a new mercury limit that is less than the number presently in Regulation 346, and that limit is, in turn, adopted by Ontario MOE can lower that number and review existing Certificates to determine whether they are in compliance. Ontario MOE and the sources could cooperatively work out a schedule to phase in changes over a period of time. This keeps the pressure on to improve both control technology and apply alternative production processes.

11. Consider the following situation. An existing source has a Certificate of Approval to manufacture X widgets per day but, despite capacity, produces only ½X. The economy improves, so the company increases production to X. As a result, emissions of a persistent toxic substance are increased. The source is still within the limits of its Certificate, but the emissions increase is contrary to a policy of virtual elimination. What are Ontario MOE's options?

Any process or production rate change requires a new Certificate of Approval. This requirement would apply, for instance, if the company received a Certificate for a plant 2Y in size, to be built in stages. Initially, only Y is built, so normally, Ontario MOE would approve only Y. The company would come back to Ontario MOE when it wants to expand beyond Y. This would also apply if the company received approval for Z but, after start-up, put out only ½Z and later wanted to expand and still stay under Z.

In its application for a Certificate, the company does not request a number for a contaminant. Rather, it provides information on how the facility will be run, for example, the volume of air exiting the stack and the concentration of contaminants in that air. Ontario MOE approves a package, not just a contaminant load. The company cannot increase its contaminant load without a change to its Certificate. Ontario MOE thus keeps control to incorporate new or improved technology, revised standards, or policy changes. Ontario MOE can also amend an existing Certificate at any time.

DISCHARGE AND EMISSION DATA AND ITS AVAILABILITY

12. Discharge and emission data for all sources would benefit scientists, for instance, to estimate the relative contributions from different sources to a given water body. This, in turn, would benefit policy- and decision-makers. The availability of such information would also benefit others who wish to influence policy and decisions. What inventories are available and can the data be used for such purposes?

Emission information is reported to Ontario MOE and is accessible under the Freedom of Information and Protection of Privacy Act. The provincial program is presently being brought on line, so the amount of emission inventory information presently available is limited. Ontario will concentrate on obtaining an inventory of 35 major air sources. Other sources are required to provide this information when applying for a new Certificate. Occasionally a company will request confidentiality. There are legislative provisions in place to challenge the request and also to protect the company.

Inventories assembled by the Canadian federal government are also available and routinely used.

13. The Freedom of Information and Protection of Privacy Act places the onus on the requester to identify the source and the type of information desired. Would it not be more logical to place that information onto a publicly available register?

A request can be worded as broadly or narrowly as the requester wishes.

COMMITMENTS

14. The intervener identified a number of commitments to virtual elimination. How strong is the linkage between national and international policy declarations by the Canadian federal government and legal mandates to deal with sources like Acme?

The linkages need greater emphasis and profile. The International Joint Commission may want to consider how to better develop the path to move from policy declarations to the permitting process and other individual functions of environmental regulation.

Other declarations:

- Canada has signed onto the UNECE (United Nations Economic Commission for Europe) heavy metals protocol through the LRTAP (long-range transport of air pollutants) convention.
- The New England Governors - Canadian Premiers Mercury Action Plan is presently under development.
- The Northern Contaminants Program deals with mercury and persistent organic pollutants in traditional foods.

Comparing and Contrasting the Canadian and United States Legal Landscapes

The workshop provided opportunity to compare and contrast the Canadian and United States legal landscapes. The division of responsibilities for environmental protection between the U.S. federal government and the states is distinct from the division between the Canadian federal government and the provinces. In the United States, the U.S. Environmental Protection Agency represents national environmental issues on behalf of the federal government. In Canada, the provincial governments appear to dominate environmental issues. The U.S. legal framework was characterized as largely process and the Canadian highly flexible. Administrators and legislators in both countries could benefit by adopting elements one from the other.

1. Please elaborate on the respective roles and responsibilities of the Canadian federal and provincial governments.

The British North America Act, which created Canada as a nation in 1867, did not specifically address the environment. Through interpretation and application, the responsibility for environmental protection is seen as shared, but there are no strict lines of division between the federal and provincial levels of government. The federal authorities have clear responsibility to deal with certain issues, and provincial authorities with others, with occasional overlap which is open to discussion. The federal government deals with environmental matters, for example, under its commerce and trade powers and in treaties.

The federal-provincial process is dynamic and continues to evolve. Governments sort things out as they go along. It would be unusual to engage in a direct jurisdictional fight, which would lead to a constitutional argument about authority. The federal Fisheries Act is an example of a shared authority, with both the federal and provincial governments availing themselves of certain provisions. In a similar vein, Ontario can lay charges against a source under the Ontario Water Resources Act, and the federal government can under the Fisheries Act.

Generally, the Canadian federal government role in the provincial approvals or permitting processes is confined to reviewing and commenting on applications that raise issues falling within the mandate of federal departments.

The Canadian approach to environmental protection is primarily based on the principle of cooperative federalism. Consider, for example, the Harmonization Accord signed by the federal, provincial, and territorial governments in January 1998. That Accord sorts out roles and responsibilities, and priorities have been set to deal with a range of environmental issues. In the context of air, this includes smog, SO_2, ozone, NO_x, and mercury. Through the Accord, a broadly-agreed-to national action plan and standards will be created, but responsibility for implementation would go to the most appropriate level of government, be it federal, provincial, or other. The Canadian Environmental Law Association brought a lawsuit against the federal government challenging the legality of the Accord because it alters the way the federal and provincial governments interact. The merits of the case demonstrate that the dynamic can be controversial. The issue is more political than legal.

One could contend that the Canadian approach is long and frustrating, and a downward spiral to the lowest common denominator but, in the Canadian context, it is an efficient way to operate. The issue is not how the systems operate but, rather, can environmental problems be resolved. For example, under its trade and commerce authority, the federal government has set automobile emission limits applicable at the time of sale. The provinces have, from time to time, made the emission limits more stringent. To ensure compliance with all, a company applies the most stringent limit.

2. Can governments of one country intervene in a case in the other?

The federal Canadian Environmental Protection Act and the U.S. Clean Air Act contain reciprocity provisions which would apply in the event of real or potential transboundary issues. There have been a number of cases where governments have intervened across the border. The U.S. federal or a state government would have to seek leave if it wished to intervene in an Ontario case.

3. Please contrast the U.S. and Ontario approaches to dealing with emission sources.

U.S. legislation has established technological requirements for air sources, such as MACT (maximum achievable control technology) standards, along with a mechanism for mandatory review. In Ontario, there is no specific point where the Ontario Ministry of the Environment could review all existing Certificates that involve, for instance, mercury. Rather, sources are handled on a case-by-case basis. This introduces greater uncertainty, but allows greater flexibility and opportunity to implement technological advances as they become available. Because of this approach, the newest plants are always the cleanest and the older ones not considered until other action is taken.

4. The TMDL (total maximum daily load) approach in the United States systematically looks at all sources that contribute a contaminant to an impaired water body, then regulates those sources to remove the impairment. Is there a legally grounded parallel in Canada?

Under Ontario's MISA (Municipal-Industrial Strategy for Abatement) program, initial regulations required all municipal and industrial sectors to inventory their direct discharges to water. Based on that inventory, a second set of regulations was developed to control and reduce those releases over time. The intent was to also consider air emissions under the Clear Air Program, but that has never been done. The number of air sources is ten-fold greater than water sources, resulting in concerns about cost and management problems.

Through the acid rain program, Canada, and Ontario in particular, identified significant sources and developed specific regulations to deal with them.

Key Findings

ANSWERS TO THE QUESTION

Releases of persistent, bioaccumulative toxic substances occur in the Great Lakes, water quality standards are exceeded, and fish consumption advisories are in place. The Acme Widget / Lake Hypo scenario was constructed to explore whether legal authorities exist to deal with deposition of contaminants from the air and the extent to which governments are using those authorities. The specific question was:

> What legal tools are available, under current Canadian and United States law, to control atmospheric deposition of persistent toxic substances to the Great Lakes originating from sources within and outside the basin?

In light of the information and arguments presented, there is some debate whether governments are doing everything they can. To present its perspective on the adequacy of the legal frameworks in Canada and the United States, the panel answered two specific questions.

Canada

1. Does the Canadian legislative framework allow Canada to effectively address the problem of water pollution via the atmosphere?

A qualified yes. The combination of federal and provincial frameworks is patchy, not comprehensive, and tends to be *ad hoc* and subjective.

2. Does Canada's domestic legislative framework provide for effective fulfillment of its international obligations?

A qualified no. The framework is not sufficiently prescriptive.

United States

1. Does the United States legislative framework allow the United States to effectively address the problem of water pollution via the atmosphere?

A qualified yes. Section 112 of the Clean Air Act is adequate. However, a more aggressive and creative approach needs to be taken for application of that framework.

2. Does the United States' domestic legislative framework provide for effective fulfillment of its international obligations?

There is a disconnect between the U.S. legislative framework and the international commitment to virtual elimination, specifically in the definition of the goal. If virtual elimination is defined as absence of harm, that is, removal of fish-consumption advisories, the answer is a qualified yes. If virtual elimination is defined as zero discharge, the answer is a qualifed no.

AGREEMENT REQUIREMENTS

The Great Lakes Water Quality Agreement calls for restoration of beneficial uses, one of which is fish edibility. Restoration would be reflected in the lifting of fish-consumption advisories. Rather than exploring ways to ratchet releases down to a point where advisories could be lifted, the tenor of the presentations and discussion was oriented toward not increasing releases.

An initiative such as development of MACT (maximum achievable control technology) standards combined with residual risk analysis, as presently envisioned, might be sufficient to lead to removal of some fish-consumption advisories. However, to eliminate all advisories, additional work will be required, for example, with contaminated sediment, sources such as the utility sector, and sources on a global scale.

The Agreement's Annex 15 (Airborne Toxic Substances) commits both countries to reduce air emissions that contribute to deterioration of Great Lakes water quality. To ascertain whether programs are on track, the underlying science must be improved and monitoring programs expanded, for example, in terms of emission inventories, contributions from different geographic regions, and trends.

VIRTUAL ELIMINATION AND PRECAUTION

Both Canada and the United States have adopted the concept of virtual elimination for persistent toxic substances. Their commitment is reflected in domestic legislation and as signatories to the Agreement. Through various declarations, protocols, and other instruments, both countries have also ascribed to the precautionary principle at the international level. However, both need to more explicitly incorporate virtual elimination and precaution into specific domestic programs and decision-making processes. Further, to help meet their international obligations, both need to better align their existing legislative and institutional frameworks and better use their authorities.

THE SCIENCE

Clearly, there are technical challenges to the linking of loadings to a particular water body back to specific pollutant sources. The Lake Michigan mass balance study and associated modelling work have helped determine contaminant sources within and outside the basin, and the Devil's Lake and Everglades studies are exploring relevant scientific questions and identifying individual sources. The Lake Michigan work has provided a basis to explore jurisdictional issues but, for the most part, science has not yet been linked to the institutional framework. The scientific community must be better engaged so their work informs policy making. The science to link atmospheric deposition back to individual sources, where reductions are required, can proceed in parallel with work on the institutional framework to achieve those reductions.

THE U.S. LEGAL FRAMEWORK

The NPDES Program

There are two significant drawbacks to addressing the air deposition issue through the NPDES (National Pollutant Discharge Elimination System) water permit program under the Clean Water Act – the length of time that would be required to establish a solid legal foundation through the judicial system, from district courts, through courts of appeal and ultimately the Supreme Court; and case-by-case application of requirements to deal with a broad, widespread area-type of problem. A more comprehensive approach is required.

The Clean Air Act

Existing legal authority under Section 112 of the Clean Air Act appears to provide an adequate basis to deal with the air-deposition issue, particularly a sector-based approach to establish MACT standards that could be applied nationwide. The underlying authority appears to be in place for the U.S. Environmental Protection Agency (EPA) to either use existing provisions or develop additional requirements.

The TMDL Process

The TMDL (total maximum daily load) process is an essential component of the U.S. regulatory framework. Since the process views water pollution problems broadly, particularly on a watershed basis, and specifically considers air deposition, it offers promise as a legal authority and conceptual approach. It could enlighten and inform public debate, drive the legislative rule-making agenda, and lead to legal authorities for non-point sources and air deposition. TMDL rules and regulations, presently under development, could be cast to support an overall strategy to protect water quality from air deposition of contaminants. In addition to prescriptive regulations, the TMDL process could lead to incentives and market-based programs.

Assuming that total loadings to a water body are established, solid links between atmospheric loadings and specific sources established, and appropriate monitoring is in place, requirements on an individual source could be imposed through a TMDL air permit process analogous to the NPDES water permit program. However, it may be premature to rely on the TMDL process.

In response to requests from U.S. EPA, states have prepared lists of contaminants for TMDL development. For the most part, these are conventional pollutants. Further, the plans are for single-jurisdiction water bodies of a size much smaller than the Great Lakes.

The initial focus in Michigan is on phosphorus, with a time frame – considered ambitious – of more than a decade. The time frame will be even longer for a persistent toxic substance. Decades may pass before actual reductions in the environment are realized. Further, there are strong legal disagreements between the federal and state governments as to whether federal statutes contain authority to impose TMDL requirements. States may have adequate authority, independent of the underlying federal statutes, as demonstrated by Michigan's use of multi-pathway risk assessment for toxic substances. However, even if a state has authority, it may not feel compelled to exercise that authority in support of the TMDL.

ADDITIONAL ISSUES

Three additional issues identified were the need for Canada and the United States to:

- Expand monitoring programs, including emission inventories and trends, in order to ensure availability of information about the response to programmatic measures taken.
- Strengthen the scientific linkages between specific sources of contaminants and deposition to a particular water body, and link that science to the legal and institutional framework to deal with those sources.
- Incorporate transboundary considerations into their domestic legislative frameworks.

and for the United States to:

- Investigate the application of other provisions of the U.S. Clean Air Act as well as application of independent state authorities.

Appendices

APPENDIX A

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APPENDIX B

SUMMARY OF COMMENTS RECEIVED AFTER THE WORKSHOP

After the workshop, several participants shared further thoughts relevant to the issues laid out in the scenario. These are summarized below.

U.S. CLEAN AIR ACT

Other sections of the Clean Air Act could provide additional tools for plaintiff's attorneys to argue their case. Legal viewpoints would be beneficial.

Section 112(c)(6) specifically addresses seven persistent, bioaccumulative pollutants – mercury, alkylated lead, polycyclic organic matter, hexachlorobenzene, PCBs, 2,3,7,8-TCDF, and 2,3,7,8-TCDD. This provision requires the U.S. Environmental Protection Agency (EPA) to list categories and sub-categories of sources accounting for not less that 90% of the aggregate emission of each pollutant and ensure that such sources are subject to standards.

Under **Section 112(d)**, U.S. EPA must promulgate standards for hazardous air pollutants for new and existing "major sources." A major source is defined as any stationary source that emits, or has the potential to emit 10 tons per year or more of any hazardous air pollutant (mercury included) or 25 tons per year or more of any combination of hazardous air pollutants. However, U.S. EPA may establish a lesser quantity for a major source, based on the potency of the air pollutant, persistence and potential for bioaccumulation. U.S. EPA has not yet employed this discretionary authority.

Section 112(d)(4) allows U.S. EPA to consider threshold levels for pollutants for which a health threshold has been established. U.S. EPA may consider such a threshold level, with an ample margin of safety, when establishing emission standards under Section 112. U.S. EPA has not yet employed this legal authority.

Under **Section 112(f)**, residual risk, U.S. EPA must promulgate standards for each category or subcategory of sources pursuant to sub-section (d) in order to provide an ample margin of safety to protect public health and to prevent adverse environmental effects. These standards must be promulgated within eight years after promulgation of standards takes place under Section 112(d). This is not yet an available tool for forcing emission reductions but may become significant in the future.

MICHIGAN'S AIR TOXICS RULES

States have the option of exercising their independent sovereign authority to act or regulate in the area of toxic air deposition, to account for persistent, bioaccumulative toxic substances and for multiple pathway exposure. Michigan's **Rule 228** allows its Department of Environmental Quality (DEQ) to determine, on a case-by-case basis, that the maximum allowable emission rate may not provide adequate protection of human health or the environment. Michigan DEQ may then establish a maximum allowable emission rate, considering all relevant scientific information, such as exposure from routes other than direct inhalation, synergistic or additive effects from other toxic air contaminants, and effects on the environment. The scenario assumed that such an assessment had been done, and the decision-maker had considered the estimated impacts in granting the permit, without the availability of any guidance or rule on acceptability of incremental risks when pre-existing risks were already substantial.

Legal arguments around Rule 228 would be beneficial to help strengthen or clarify the application of this tool.

ZERO DISCHARGE

Plaintiff's attorneys emphasized the goal of zero discharge and appeared unwilling to accept any *de minimis* amount of mercury released into the environment from any sources (even distant ones) that could add any amount via deposition, unless demonstrated to be acceptable under an existing TMDL (total maximum daily load) and waste-load allocation designed to restore all designated uses of the water body, or perhaps if accompanied by an offset. This laudable goal does not appear very practical in the short term since it includes all sources, with no *de minimis* emission amount or maximum distance criterion. It may, however, be a practical interim step to achieve zero discharge.

Such a phased approach would require a risk management decision without a firm foundation in risk assessment, because the scientific certainty may never be available that proves that an adverse environmental or public health effect was caused by a release from a specific source. The decision could establish a schedule with an associated maximum allowable increase over background. For example, the proposed new source could increase the deposition of mercury over background by a maximum of 10% until 2005, 5% by 2010, 1% by 2015, and virtually eliminate additional anthropogenic influences by 2020. Potentially, these limits could be exceeded if demonstrated to be environmentally acceptable as shown, for instance, through a TMDL waste load allocation.

RISK CHARACTERIZATION

To provide a more complete risk characterization for the permit decision-maker, Michigan DEQ uses, in specific instances, authority under Michigan's Air Toxics Rules to require the evaluation of emission impacts on indirect pathways of human exposure. Legal arguments regarding the scope and significance of such assessments and their findings would be instructive.

MODELS

The legal cases focused in large part on the extent to which mercury emissions affect mercury levels in fish, with the opinions ranging from little to significant. The debate centered on the efficacy of models and, therefore, the extent to which authorities should rely upon them in decision-making.

The debate would be better informed if models and their predictions could be evaluated against real-world data. There may be opportunity to do so. In its *Mercury Study Report to Congress*, through use of the same type of models as in the workshop, U.S. EPA predicted that incinerators were responsible for about   of the mercury deposition in the United States. The models also predicted the extent that mercury levels in fish resident in downwind water bodies would be raised.

Most incinerators have all but eliminated their mercury emissions or are about to do so. Municipal waste incinerators must do so by 2000 and medical waste incinerators by 2001. Some incinerators are in the vicinity of Lake St. Clair. Michigan and Ontario have information on mercury levels in fish from the lake before these incinerators began operation, during peak emission periods, and afterwards. Therefore, it should not be difficult to determine whether the elimination of these mercury emissions measurably affected fish. Confounding factors, such as effects arising from mercury in contaminated sediment, would have to be considered. A better test of U.S. EPA's model would be to evaluate trends at an inland lake in close proximity to an incinerator. Suitable lakes should not be difficult to identify.

Such an evaluation would go a long way to inform public debate and decision-making.

APPENDIX C

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APPENDIX D

IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF MICHIGAN

FRIENDS OF LAKE HYPO,

Plaintiff,

vs.

ACME WIDGET,

Defendant.

PLAINTIFF FRIENDS OF LAKE HYPO's MOTION FOR SUMMARY JUDGMENT

Neil S. Kagan
Paul Benington

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I. STATEMENT OF ISSUES PRESENTED

Facilities that emit toxic substances into the atmosphere contribute significantly to the pollution of waters within the Great Lakes basin, because some of those substances are eventually deposited in the water. One toxic substance emitted into the air that later falls into the water is mercury. Mercury is a neurotoxin that not only persists in the environment for a very long time, but also accumulates in plant and animal tissue in ever increasing concentrations as it moves up through the food chain.

The overarching issue this case presents is whether existing laws designed to protect water quality provide the means to control the atmospheric deposition of mercury traceable to a particular facility. More specifically, this case presents the following issues:

May Acme Widget ("Acme") operate a facility without a water quality permit when the mercury it would emit into the air would fall into Lake Hypo, polluting the water?

May Acme even get a water quality permit when the mercury spewed from its stack would contribute to a violation of the water quality standard for Lake Hypo by exacerbating the existing impairment of its warmwater fishery and lowering its water quality?

May Acme operate its stack when doing so would contribute to the deposition of mercury into Lake Hypo, presenting an imminent and substantial endangerment to health or the environment?

Friends of Lake Hypo ("Friends") will show that the proper answer to each of these questions is "no." Under the circumstances in this case, either the Clean Water Act, 33 U.S.C. § 1251 *et seq.* ("CWA"), or the Resource Conservation and Recovery Act, 42 U.S.C. § 6901 *et seq.* ("RCRA"), prevents Acme from further contaminating the waters of Lake Hypo with mercury–a persistent, bioaccumulative toxic substance.

II. MOST APPROPRIATE AUTHORITY FOR RELIEF SOUGHT

A. Relief Sought Under The Clean Water Act

1. A judgment declaring that Acme Widget's proposed discharge of mercury is subject to the requirements of the Clean Water Act.

The Declaratory Judgment Act empowers the federal courts to declare the rights and legal relations between the parties to an actual controversy. 28 U.S.C. § 2201. Declaratory relief is appropriate (1) when the judgment will serve a useful purpose in clarifying and settling the legal relations in issue, and (2) when it will terminate and afford relief from the uncertainty, insecurity, and controversy giving rise to the proceeding. *Grand Trunk Western Railroad Co. v. Consolidated Rail Corp.*, 746 F.2d 323, 326 (6th Cir. 1984)

Friends seek a declaratory judgment that § 301(a) of the CWA, 33 U.S.C. § 1311(a), prohibits Acme from discharging mercury from its stack into Lake Hypo without first getting a permit pursuant to § 402(a) of the CWA, 33 U.S.C. § 1342(a).

2. A permanent injunction.

The citizen suit provision of the CWA, § 505(a), 33 U.S.C. § 1365(a), empowers the federal courts to enforce an effluent standard or limitation against any person violating such a standard or limitation. Specifically, the CWA provides, "any citizen may commence a civil action . . . against any person . . . who is alleged to be in violation of . . . an effluent standard or limitation under this chapter . . . ." CWA, § 505(a)(1), 33 U.S.C. § 1365(a)(1). The CWA further provides, "The district courts shall have jurisdiction . . . to enforce such an effluent standard or limitation." *Id.* at § 505(a), 33 U.S.C. § 1365(a).

"[T]he term 'effluent standard or limitation under this chapter' means [among other things] . . . an unlawful act under subsection (a) of section 1311 of this title . . . ." CWA, § 505(f), 33 U.S.C. § 1365(f). In other words, the term "effluent standard or limitation under this chapter" includes the discharge of a pollutant contrary to § 301(a) of the CWA, 33 U.S.C. § 1311(a). That section prohibits the discharge of a pollutant in the absence of a National Pollutant Discharge Elimination System ("NPDES") permit issued pursuant to § 402(a) of the CWA, 33 U.S.C. § 1342(a).

Since Acme does not have an NPDES permit, its discharge of a pollutant into Lake Hypo would be contrary to § 301(a). As a result, Friends may bring this citizen suit to stop the operation of Acme's facility. *Cf. Piney Run Preservation Ass'n v. County Commissioners of Carroll County, Maryland*, 50 F.Supp.2d 443, 445 (D. Md. 1999) (a citizen suit may be brought against a point source discharging a pollutant not listed on the point source's NPDES permit, because the discharge of that pollutant would violate an effluent standard or limitation by violating § 301(a)'s prohibition on discharges without an NPDES permit).

Moreover, Acme can not get an NPDES permit, because under its current plans of operation it would contribute to a violation of the water quality standard for Lake Hypo. *See* 40 C.F.R. § 122.4(I). Accordingly, Friends seek an order permanently enjoining Acme from operating its facility as currently planned. In the alternative, Friends seek an order permanently enjoining Acme from operating its facility unless and until it complies with § 402(a) of the CWA, 33 U.S.C. § 1342(a), by applying for and obtaining an NPDES permit.

Ignoring the plain language of the citizen suit provision, Acme contends that a citizen suit may only seek to enforce limitations or conditions incorporated into an existing NPDES permit. Acme, of course, has no NPDES permit. Mistaking Friends' suit to be one seeking to enforce a water quality standard not incorporated into an existing permit, rather than one seeking to enforce the requirement to get a permit, Acme concludes that Friends' suit is improper. Acme cites three cases in support of its conclusion, but they are either distinguishable or inapposite.

The first case, *Atlantic States Legal Foundation, Inc. v. Eastman Kodak Co.*, 12 F.3d 353 (2nd Cir. 1993), does not stand for the proposition that a discharger without a permit is immune from a citizen suit because it has no legal obligations. In that case, Eastman-Kodak had a permit. An environmental group sued the company for discharging substances that were not listed in the permit. The court found that, although the permit did not specifically assign effluent limitations for those pollutants, they had been regulated under the agency's reporting requirements. *See id.* at 356. Therefore, Eastman-Kodak satisfied both the permit limitations and the reporting requirements established by the agency. *See id.* at 357. In Acme's case, no permit or reporting requirements have been met.

In the second case Acme cites, *Oregon Natural Resources Council v. U.S. Forest Service*, 834 F.2d 842 (9th Cir. 1987), an environmental group sued the Forest Service to stop a timber sale. One of the claims was that timber harvesting and the associated road construction would violate state water quality standards, and that the Forest Service's failure to comply with those standards would violate the CWA. The court dismissed the CWA claim because it "did not believe that the Act allows for the enforcement of state water quality standards, as affected by *non-point sources*, under the citizen suit provision." *Id.* at 849 (emphasis added). The plaintiffs conceded "that section 1311(a) of the Act refers specifically to *point source discharges, . . . which are not at issue in this case.*" *Id.* at 848-49. Acme's discharge, on the other hand, is from a point source. Therefore, *Oregon Natural Resource Council* is not on point.

Finally, in relying on *EPA v. California ex rel State Water Resources Control Bd.*, 426 U.S. 200, 205 (1976), Acme confuses the issue of whether water quality standards not incorporated into a permit are enforceable with the issue of whether the obligation to get a permit is enforceable. According to Acme, the court said "it is the NPDES permit that translates water quality standards into enforceable obligations of the discharger." The accuracy of Acme's characterization of the case notwithstanding, the case neither addresses, nor precludes, a citizen suit brought to enforce the requirement that a discharger get a permit. Moreover, the case only concerned whether federal facilities are subject to state permit requirements; it did not address citizen suits at all. *See id.* at 200.

B. Resource Conservation And Recovery Act

1. A judgment restraining Acme from disposing of solid or hazardous waste in Lake Hypo, or ordering Acme Widget to take such other action as may be necessary, or both.

The citizen suit provision of the RCRA, 42 U.S.C. § 6972(a)(1)(B), empowers the federal courts "to restrain any person who has contributed or who is contributing to the past or present . . . disposal of any solid or hazardous waste [which may present an imminent and substantial endangerment to health or the environment] . . . [or] to order such person to take such other action as may be necessary, or both." Friends invoke this authority to restrain Acme from operating its facility as currently planned. Otherwise, Acme would contribute to the deposition of mercury into Lake Hypo, further contaminating fish that inhabit the lake and increasing the existing danger to the health of humans who consume such fish.

Contrary to Acme's claim, nothing in the case law suggests that Friends cannot bring this RCRA citizen suit. Acme bases its claim, in part, on the decision in *Coalition for Health Concern v. LWD, Inc.*, 60 F.3d 1188 (6th Cir. 1995). In that case, the plaintiff attempted to enjoin a facility that had already received a federally approved state hazardous waste permit. The court concluded that the plaintiff's allegations of imminent and substantial endangerment were not serious enough to warrant reopening an issue that had already been resolved at the state and federal level. *Coalition for Health Concern*, 60 F.3d at 1189. That case is distinguishable from this, because the defendant there had obtained a state hazardous waste permit. *Id.* Acme has not, and has not even applied for one. Acme's reliance on *Greenpeace, Inc. v. Waste Technologies Industries*, 9 F.3d 1174 (6th Cir. 1993) is similarly misplaced. The court dismissed the case because the defendant already had a hazardous waste permit. *Greenpeace*, 9 F.3d at 1176, 1179-81.

Both in *Coalition for Health Concern* and *Greenpeace*, the courts' decisions were influenced by their determination that the suits were merely a "collateral attack on [the] hazardous waste permitting process." *Coalition for Health Concern*, 60 F.3d at 1192; *see Greenpeace*, 9 F.3d at 1176. The plaintiffs had stopped participating in the public administrative permitting process, ignored RCRA's administrative appeals process, and went straight to the courts. *Coalition for Health Concern*, 60 F.3d at 1189; *Greenpeace*, 9 F.3d at 1176. The present case would be analogous only were Friends bringing a Clean Air Act ("CAA") citizen suit (because Acme has already obtained a CAA permit), or if Acme had obtained a hazardous waste permit.

Acme nevertheless argues that Friends may not bring a RCRA citizen suit, because the Michigan Department of Environmental Quality ("MDEQ") issued an air permit to Acme authorizing it to operate its facility. The flaw in this argument is that an air permit, at best, assures compliance with the CAA, but not with RCRA. Acme's air permit is no substitute for a state hazardous waste permit. *See Orchard v. Pete Lien & Sons Inc.*, 34 Envtl. Rept. Cases ("ERC") 1749, 1750 (D. Co. Jan. 8, 1992) ("I see nothing in the statutes which say [sic] that if someone is complying with Clean Air Act permits that there cannot also be a suit under RCRA, a citizen suit under section 6972.").

Acme also argues that MDEQ issued an air permit, even though it "*may* deny" one to a source whose "operation presents an imminent and substantial endangerment to human health, safety, or welfare or to the environment." Natural Resources and Environmental Protection Act ("NREPA") Mich. Comp. Laws § 324.5510(b) (emphasis added). Based on this, Acme claims that MDEQ implicitly determined that Acme's operation did not present an imminent and substantial endangerment, precluding a RCRA citizen suit. No such inference may be drawn, however. The statutory language is permissive, not obligatory. MDEQ "may," but need not deny an air permit to a source that presents an imminent and substantial endangerment. Moreover, compliance with NREPA does not ensure compliance with RCRA. Even were MDEQ deemed to have implicitly determined that Acme's operation does not *definitely* present an imminent and substantial endangerment, it did not determine that Acme's operation *may* not present such an endangerment. Under RCRA, of course, Friends are entitled to bring a citizen suit even if the disposal of solid or hazardous waste "*may* present an imminent and substantial endangerment to health or the environment." 42 U.S.C. § 6972(a)(1)(B).

III. STATEMENT OF FACTS

Lake Hypo has a maximum length and width of 45 kilometers by 40 kilometers, and a maximum depth of 6.5 meters. Its surface area is 1,115 square kilometers and its shoreline length is 272 kilometers. Ninety-eight percent of the water enters the lake via the Hypo River, which has an average discharge of 5,200 cubic meters per second, with a range between 3,000 and 6,700 cubic meters per second. The average flush time is five to seven days.

The State of Michigan has designated Lake Hypo for use as a warmwater fishery. Warmwater fish species found in the lake include bass, pike, and walleye.

Mercury is present in the water column–both of Hypo River and Lake Hypo–at a concentration of two nanograms per liter. Based on the average flow of Hypo River, this translates to an average annual mercury loading of 328 kilograms.

Michigan has also issued mercury-based fish consumption advisories for bass, pike, walleye, and several other fish species found in Lake Hypo. As a result of these fish consumption advisories, Michigan has included the lake on its list of water quality limited segments under § 303(d) of the CWA, 33 U.S.C. § 1313(d). The EPA has approved the § 303(d) listing of the lake.

Acme Widget is located near the southeast corner of Lake Hypo, on the river that drains the lake. Michigan has issued an air permit to Acme, allowing it to emit mercury from a stack 90 meters high with an exit diameter of 2.5 meters at the rate of 193.1 kilograms per year, or 0.21 tons per year, assuming near continuous operation. Half of the mercury would be emitted in the form of mercury chloride, half as elemental mercury. The air permit is the only permit Michigan has issued to Acme.

The prevailing wind would carry the plume from Acme across Lake Hypo a major fraction of the time, that is to say, thirty to forty percent of the time. That means sixty to eighty kilograms of Acme's annual mercury emissions would be transported across the lake. Taking into account the characteristics of Acme's stack, a computer dispersion model developed by the Ontario Ministry of Environment estimated that the average annual concentration of mercury across the area of Lake Hypo would be thirty to forty picograms per cubic meter. The same model has previously yielded results similar to those generated by the EPA's Industrial Source Complex model.

The total annual background deposition of mercury to Lake Hypo is nine kilograms. No mercury sources other than Acme are large enough or close enough to the lake to contribute a significant amount of mercury to the background deposition. Computer modeling predicts that the combined annual dry and wet deposition of mercury attributable to Acme's emissions would also be nine kilograms.

During the air permitting process, a multi-pathway risk assessment was conducted that predicted that Acme would contribute to an increase in the mercury levels in fish inhabiting Lake Hypo. All mercury deposited in the lake as a result of Acme's emissions would manifest itself through an increase in the concentration of methyl mercury in fish. Methyl mercury, which bioaccumulates, poses the greatest threat to human and ecosystem health.

The additional nine kilograms of mercury in the water that would come from Acme's stack would result in a 0.6% to 3% increase in the concentration of methyl mercury in fish. A three percent increase would be significant, and would lead to fish consumption advisories that would apply to smaller-sized fish and would be more restrictive for at-risk populations, such as children, pregnant women, women of child-bearing age, aboriginal and certain subsistence populations, and perhaps recreational anglers.

IV. ARGUMENT

A. Standard For Summary Judgment

Summary judgment is properly granted when no genuine and disputed issues of material fact remain, and when, viewing the evidence most favorably to the non-moving party, the movant is clearly entitled to prevail as a matter of law. Fed. R. Civ. P. 56; *Celotex Corp. v. Catrett*, 477 U.S. 317, 322-23 (1986).

B. Acme may not operate without a Clean Water Act permit, because it would discharge mercury into Lake Hypo from a point source.

1. The goal of the Clean Water Act is to restore and maintain the quality of the Nation's waters.

The objective of the CWA "is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." CWA, § 101(a), 33 U.S.C. § 1251(a). To achieve this objective, Congress declared, among other things, that "it is the national goal that the discharge of pollutants into the navigable waters be eliminated by 1985," and that "it is the national policy that the discharge of toxic pollutants in toxic amounts be prohibited." *Id.* at § 101(a)(1) & (3), 33 U.S.C. § 1251(a)(1) & (3).

The enactment of the CWA followed Congress's finding that "the [prior] national effort to abate and control water pollution has been inadequate in every vital aspect." S. Rep. No. 92-414, 92d Cong., 1st Sess. 7 (1971), *reprinted in* 2 Legislative History of the Water Pollution Control Act Amendments of 1972, at 1415, 1425 ("Legislative History"); U.S. Code Cong. & Admin. News 1972, pp. 3668, 3674. That finding led Congress to adopt the CWA, which the Supreme Court has described as "a comprehensive water quality statute." *See PUD No. 1 of Jefferson County v. Washington Dept. of Ecology*, 511 U.S. 700, 704 (1994).

The intended extent of the CWA's objective to restore and protect the quality of the Nation's waters is revealed by the report of the House Committee on Public Works, which described the objective "in the broadest possible terms," *Minnehaha Creek Watershed District v. Hoffman*, 597 F.2d 617, 624 (8th Cir. 1979):

> Subsection (a) of section 101 declares the objective of this legislation to be the restoration and maintenance of the chemical, physical, and biological integrity of the Nation's waters. The word "integrity" as used is intended to convey a concept that refers to a condition in which the natural structure and function of ecosystems is maintained. . . . *Any change induced by man which overtaxes the ability of nature to restore conditions to "natural" or "original" is an unacceptable perturbation.*" (Emphasis added.)

H. Rep. No. 92-911, 92d Cong., 2d Sess. 76-77 (1972), *reprinted in* 1 Legislative History 753, 763-764.

a. Congress intended the Clean Water Act to be applied broadly to achieve its goals.

Congress's purpose in enacting the CWA was both "broad and remedial" in nature. *Minnehaha Creek Watershed District*, 597 F.2d at 624. "The [CWA] was designed to regulate *to the fullest extent possible* those sources emitting pollution into rivers, streams and lakes." *U.S. v. Earth Sciences, Inc.*, 599 F.2d 368, 373 (10th Cir. 1979) (emphasis added). The ambitious nature of the CWA's goals has prompted the observation that "the CWA should be liberally construed to achieve its objectives." *Scott v. City of Hammond, Ind.*, 741 F.2d 992, 998 (7th Cir. 1984); *see also PUD No. 1 of Jefferson County*, 511 U.S. at 704.

b. As a remedial statute, the Clean Water Act must be liberally construed.

A "well-accepted principle" of statutory interpretation is that remedial legislation must be liberally construed to give effect to its purpose. *See U.S. v. An Article of Drug . . . Bacto-Unidisk*, 394 U.S. 784, 798 (1969); *Stroh v. Director of Office of Workers' Compensation Programs, U. S. Dept. of Labor*, 810 F.2d 61 (3d Cir. 1987); *Scott*, 741 F.2d at 998; *International Nutrition, Inc. v. U.S. Dept. of Health & Human Services*, 676 F.2d 338, 341 (8th Cir. 1982). In *An Article of Drug*, for instance, the court found that a laboratory aid could be considered a drug even though it met the statutory definition of a "device," which was expressly excluded from the statutory definition of a "drug." *See An Article of Drug*, 394 U.S. at 789, 798; 21 U.S.C. § 321(g)(1)(D) (a drug "does not include devices"). In drawing this conclusion, the Supreme Court rejected the narrow construction that the lower courts gave to the term "drug," saying "we are all the more convinced that we must give effect to congressional intent in view of the well-accepted principle that remedial legislation such as the Food, Drug, and Cosmetic Act is to be given a liberal construction consistent with the Act's overriding purpose to protect the public health." *An Article of Drug*, 394 U.S. at 798. Similarly, in *Stroh*, the court affirmed the agency's broad interpretation of the statutory term "miner"[1] to include a self-employed truck driver who never entered a mine and whose commercial activity was between a mine and processing plants located elsewhere. *See Stroh*, 810 F.2d at 63.

Courts have liberally construed provisions of the CWA itself to effectuate its ambitious goals. For instance, the CWA defines the term "navigable waters" as "the waters of the United States, including the territorial seas." CWA, § 502(7), 33 U.S.C. § 1362(7). "Federal Courts have interpreted this directive broadly to include waters tributary to those which are navigable in fact." *Sierra Club v. Colorado Refining Co.*, 838 F. Supp. 1428, 1431 (D. Co. 1993), *citing Quivira Mining Co. v. U.S. Environmental Protection Agency*, 765 F.2d 126, 129 (10th Cir. 1985). The CWA's civil action enforcement provision also has been interpreted broadly to allow courts to exercise their discretion in achieving the statute's goals. *See U.S. v. Telluride Co.*, 146 F.3d 1241, 1248 (10th Cir. 1998). Similarly, the Seventh Circuit created the "constructive submission" doctrine to give effect to the CWA's restoration provision after a state refused to implement the provision over a long period of time. *See Scott*, 741 F.2d at 998.

2. The Clean Water Act prohibits the discharge of any pollutant to navigable waters from any point source without an NPDES permit.

In furtherance of Congress's objective to restore and maintain water quality, the CWA prohibits the discharge of any pollutant to navigable waters by a point source, unless the point source first gets a permit:

> Except as in compliance with this section and section[] . . . 1342 [§ 402, authorizing the issuance of a permit] . . . , the discharge of any pollutant by any person shall be unlawful.

CWA, § 301, 33 U.S.C. § 1311(a).

3. Acme's facility would discharge a pollutant into navigable waters from a point source.

a. Acme's stack is a point source under the Clean Water Act.

(1) Consistent with Congressional intent, courts have interpreted the term "point source" broadly to include any identifiable conveyance from which pollutants are or may be discharged.

The CWA defines the term "point source" as follows:

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[1] "The term miner means any individual who works or has worked in or around a coal mine or coal preparation facility in the extraction or preparation of coal. Such term also includes an individual who works or has worked in coal mine construction or transportation in or around a coal mine, to the extent such individual was exposed to coal dust as a result of such employment." 30 U.S.C. § 902(d).

> The term "point source" means *any* discernible, confined and discrete conveyance, *including, but not limited to* any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged.

CWA, §502(14), 33 U.S.C. §1362(14) (emphasis added).

The plain meaning of the phrase "including, but not limited to" is that the list of point sources given in the statutory definition is not exhaustive. The courts have recognized that Congress gave the term an open-ended definition so it would be construed expansively. "The concept of a point source was designed to further th[e statutory] scheme [establishing the permit requirement] by embracing the broadest possible definition of any identifiable conveyance from which pollutants might enter waters of the United States." *Earth Sciences,* 599 F.2d at 373; *see also Kennecott Copper Corp. v. Environmental Protection Agency*, 612 F.2d 1232, 1243 (10th Cir. 1979) ("Congress . . . purposely phrased th[e] definition broadly."); *San Francisco Baykeeper v. Tidewater Sand & Gravel Co.*, No. C 96-01531 CW, 1997 U.S. Dist. LEXIS 22602, at *22 (N.D. Cal. Sep. 9, 1997) ("The term 'point source' should be construed broadly to effectuate the remedial purposes of the Clean Water Act."). To exempt any activity that emits pollution from an identifiable point from regulation would be to contravene the CWA. *See Earth Sciences,* 599 F.2d at 373.

"The touchstone for finding a point source is the ability to identify a discrete facility from which pollutants have escaped." *Washington Wilderness Coalition v. Hecla Mining Co.*, 870 F. Supp. 983, 988 (E.D. Wash. 1994). Courts have held a broad range of sources to be point sources. They run the gamut from piles of mined materials or sand, to bulldozers and backhoes, to pressurized sprays from irrigation systems or hoses. *See United States v. Schallom,* 998 F.2d 196, 198 (4th Cir. 1993); *Avoyelles Sportsmen's League, Inc. v. Marsh,* 715 F.2d 897, 922 (5th Cir. 1983); *Sierra Club v. Abston Constr. Co., Inc.*, 620 F.2d 41, 45 (5th Cir. 1980); *San Francisco Baykeeper,* 1997 U.S. Dist. LEXIS 22602, at *21-24; *United States v. Oxford Royal Mushroom Prods., Inc.*, 487 F. Supp. 852, 854 (E.D. Pa. 1980).

As a structure 90 meters high with an exit diameter of 2.5 meters, Acme's stack is easily identifiable as a discrete facility from which pollutants would escape. Nor is the fact that a pollutant would escape from the stack in any dispute. Without question, the stack is a point source.

(2) Since Congress expressly excepted certain sources from the definition of the term "point source," additional exceptions should not be inferred.

In generally prohibiting pollution from any point source, that is to say, "*any* discernible, confined and discrete conveyance . . . from which pollutants are or may be discharged," Congress expressly carved out two exceptions. CWA, § 502(14), 33 U.S.C. § 1362(14) (emphasis added). Specifically, Congress excluded "agricultural stormwater discharges and return flows from irrigated agriculture" from the definition. *Id.*

Congress thus deliberately placed only two identifiable points of pollution beyond regulation. The import of that conscious choice is that all other identifiable points of pollution are subject to regulation, including Acme's stack.

"Where Congress explicitly enumerates certain exceptions to a general prohibition, additional exceptions are not to be implied, in the absence of a contrary legislative intent." *Andrus v. Glover Construction Co.*, 446 U.S. 608, 616-17 (1980) (holding that a prohibition on contracts negotiated without advertising extends to all contracts not expressly excluded from the prohibition); *see also Lieberman v. FTC,* 771 F.2d 32 (2d Cir. 1985) (finding that a provision barring public disclosure, except for disclosure to Congress, barred the disclosure of the information to other public officials).

The history of the CWA confirms that the only exceptions to the coverage of the term "point source" should be the two Congress named. When Congress enacted the CWA, it rejected an amendment excepting return flows from irrigated agriculture from the definition of a point source. Consequently, the EPA "considered irrigation return flows and rainfall runoff to be point sources if the return flows and runoff were in any way channeled or collected by human activity prior to being discharged into the waters of the United States." Susan E. Schell, *The Uncertain Future of Clean Water Act Agricultural Pollution Exemptions After Concerned Area Residents for the Environment v. Southview Farm, 34 F.3d 114 (2d Cir. 1994), cert. denied, 115 S. Ct. 1793 (1995),* 31 Land & Water L. Rev. 113, 130 n.4 (1996) (*quoting* Drew L. Kershen, *Agricultural Water Pollution: From Point to Nonpoint and Beyond,* NAT. RESOURCES & ENV'T, Winter 1995, at 3).

Later, the EPA attempted to exempt from CWA permit requirements "(d)ischarges of pollutants from agricultural and silvicultural activities, including irrigation return flow and runoff from orchards, cultivated crops, (and) pastures," and "(d)ischarges from animal confinement facilities" below a certain size. *See id.* at 119, 130 n.46; *see also* 40 C.F.R. S 125.4(j) (1975). The EPA argued that requiring permits for all point sources would overwhelm the agency with millions of applications and that "to conserve the Agency's enforcement resources for more significant point sources of pollution, it is necessary to exclude these smaller sources of pollutant discharges from the permit program." *Natural Resources Defense Council, Inc. v. Costle,* 568 F.2d 1369, 1373, 1377- 82 (D.C. Cir. 1977).

The EPA's attempt to narrow the coverage of the term "point source" was challenged in *Costle.* The court there held that the technological or administrative infeasibility of promulgating effluent limitations for a point source may result in adjustments in the permit program, but it does not authorize the EPA to exclude the point source from the NPDES program. *Costle,* 568 F.2d at 1379. The court found "a plain Congressional intent to require permits in any situation of pollution from point sources" saying exceptions to this rule can only be created by Congress. *Id.* at 1383; *accord Scenic Hudson Preservation Conference v. Callaway,* 370 F. Supp. 162, 170 (S.D.N.Y. 1973) (finding implausible the argument that Congress intended to establish an exception for hydroelectric plants where the CWA, on its face, is all-inclusive, but for specifically enumerated exceptions; were the omission of an exception for hydroelectric plants a mere oversight, the remedy lies with Congress.)

Congress eventually created an exception for return flows from irrigated agriculture when it amended the CWA in 1977. Clean Water Act of 1977, Pub. L. No. 95-217, sec. 33(b), § 502(14), 91 Stat. 1566, 1577 (1977). Ten years later, Congress created the second exception to the definition of the term "point source," for agricultural stormwater discharges. Water Quality Act of 1987, Pub. L. No. 100-4, sec. 503, § 502(14), 101 Stat. 7, 75 (1987).

Congress has never, however, created an exception for a stack, like Acme's, that is an identifiable point of pollution, nor does any evidence of a legislative intent to exclude it exist. Consequently, its exception from the definition of the term "point source" must not be inferred.

b. Mercury is a toxic pollutant.

The CWA directs the EPA to publish a list of the toxic pollutants that must be regulated. *See* CWA, § 307, 33 U.S.C. §1317(a)(1) (1986). In doing so, the EPA "shall take into account toxicity of the pollutant, its persistence, degradability, the usual or potential presence of the affected organisms in any waters, the importance of the affected organisms, and the nature and extent of the effect of the toxic pollutant on such organisms." *Id.* Pursuant to these instructions, the EPA classified mercury and its compounds as toxic pollutants subject to regulation and permitting under the NPDES. *See* 40 C.F.R. §§401.10, 401.15 (1998).

The EPA has also classified mercury as a bioaccumulative chemical of concern ("BCC"), as has Michigan. 40 C.F.R. § 132, Table 6.A.; Mich. Adm. Code r. 323.1057, Table 5. Michigan defines a BCC as "a chemical which, upon entering the surface waters, by itself or as its toxic transformation product, accumulates in aquatic organisms by a human health bioaccumulation factor of more than 1000 after considering metabolism and other physiochemical properties that might enhance or inhibit bioaccumulation." Mich. Adm. Code r. 323.1043(l). To this definition, the EPA adds that a BCC is "any chemical that has the potential to cause adverse effects." 40 C.F.R. § 132.2.

c. Mercury from Acme's stack would be deposited into Lake Hypo.

(1) Modeling predicts that mercury from Acme's stack would be deposited into Lake Hypo.

Taking into account the characteristics of Acme's stack, a computer dispersion model developed by the Ontario Ministry of the Environment estimated that the stack would create an average annual concentration of mercury across the area of Lake Hypo of thirty to forty picograms per cubic meter. The same model has previously yielded results similar to those generated by the EPA's Industrial Source Complex model. Computer modeling also predicts that the annual deposition of mercury to Lake Hypo attributable to Acme's emissions would be nine kilograms. During the air permitting process, a multi-pathway risk assessment was conducted that further predicted that mercury emitted by Acme's stack would contribute to an increase in the mercury levels in fish inhabiting Lake Hypo.

(2) Courts and agencies rely on models such as the one used here to predict the deposition of mercury emanating from Acme's stack.

Computer models have become indispensable to courts and agencies in attempting to understand and make decisions regarding complex systems. For instance, the EPA relies extensively on computer modeling, and that reliance has been endorsed by the judiciary. In *Mision Industrial, inc. v. Environmental Protection Agency*, 547 F.2d 123, 128 (1st Cir. 1976), the EPA based a revision to an air implementation plan on a diffusion model. The petitioners claimed the EPA erred in approving the revised plan based on "an uncalibrated model, that no real life data has been used in arriving at or calibrating the accuracy of the predicted relationship between sulfur-in-fuel and air quality. *Id.* The court nevertheless upheld the EPA's determination "that the computer model was a satisfactory predictive tool on which to base . . . [the] revision." *Id.* at 129; *see also Northern Plains Resource Council v. E.P.A.*, 645 F.2d 1349, 1363 (9th Cir. 1981) (the EPA's use of an unvalidated computer model to project compliance with air quality standards was not arbitrary and capricious).

A decision based on computer modeling has even been upheld in the face of contradictory monitoring results. *See Columbus and Southern Ohio Electric Co. v. Costle*, 621 F.2d 910, 912 (6th Cir. 1980) (holding that monitored data showing past attainment of standards did not *per se* demonstrate that an EPA model was invalid or unreliable). Monitoring may not even be an effective, or reasonable, method of making decisions. *See Republic Steel Corp. v. Costle*, 621 F.2d 797, 805-06 (6th Cir. 1980) ("Thus far technology has not developed foolproof methods of validating predictions . . . absent years of collection of monitoring data with far more monitors and far more personnel than have thus far been available.")

The computer dispersion model used in this case has previously yielded results similar to those generated by the EPA's Industrial Source Complex ("ISC 2") model, and is thus particularly well-suited to model the deposition of Acme's mercury emissions. 40 C.F.R. § 51, Appendix W, A.5 (1998). The EPA recommends the use of the ISC 2 model "to assess pollutant concentrations from a wide variety of sources associated with an industrial source complex." *Id.* at Appendix W, A.5, Abstract. The ISC 2 model can account for "settling and dry deposition of particles," as well as for "separation of point sources." *Id.* It is "appropriate for . . . transport distances less than 50 kilometers . . . [and] continuous toxic air emissions. *Id.* at Appendix W, A.5, Abstract, par. a. (Lake Hypo has a maximum length and width of 45 kilometers by 40 kilometers, and Acme's stack will operate nearly continuously.) Finally, "ISC 2 may be used to model . . . continuous releases of toxic and hazardous waste pollutants," and to treat both settling and deposition. *Id.* at Appendix W, A.5, Abstract, par. e. Thus, the court may rely with great confidence on the model's prediction that Acme's stack would add nine kilograms of mercury to Lake Hypo.

d. Indirect discharges, such as the mercury that would be discharged by Acme's stack, are within the purview of the Clean Water Act.

On its face, the CWA defines the term "discharge" expansively and unconditionally to mean "***any*** addition of any pollutant to navigable waters from any point source . . . . CWA, § 502(12), 33 U.S.C. § 1362(12) (emphasis added). The CWA thus subjects each point source to control, regardless of the route pollutants might take from the point source to the water, and regardless of the medium of conveyance.

(1) Legislative history establishes that Congress intended to prohibit pollution from indirect discharges.

The legislative history of the CWA confirms that its prohibition of pollution extends to all point source discharges, without reservation. During the consideration of the Conference Committee report by the House of Representatives, Representative Dingell explained, “ It is quite clear that section 502(12) of the bill, in defining the term ‘discharge of a pollutant,’ does not in any way contemplate that the discharge be directly from the point source to the waterway.

1 Legislative History, at 255.

Further evidence that Congress intended indirect discharges to be subject to the permit requirement is found in the record of the consideration of the Conference Committee report by the Senate. Senator Muskie, the author of the Senate bill, prepared a report discussing each of the significant provisions of the bill. 1 Legislative History, at 163. “I do this,” said Senator Muskie, “because the complexities of the individual provisions are such that the legislative history will be important to those charged with the responsibility for administering the program.” *Id.* Senator Muskie explained that the term “discharge” applies both to direct and indirect discharges into navigable waters. 1 Legislative History, at 178.

(2) Courts have interpreted “discharge” to include indirect discharges.

(a) Courts have found objects, particles, and chemicals traveling through the air and deposited into navigable waters from point sources to constitute discharges.

Courts that have interpreted the term “discharge” have given effect to Congress's intention that the CWA control indirect discharges that clearly add a pollutant to navigable waters. For instance, in *United States v. Schallom*, 998 F.2d 196, 201 (4th Cir.), *cert. denied*, 510 U.S. 902 (1993), the court upheld a conviction for violating the CWA where a concentrated sand and concrete mixture was sprayed through the air before it landed in navigable waters. Another court held that spraying too much wastewater onto fields, which then ran off into a nearby stream, was a discharge from a point source. *See United States v. Oxford Royal Mushroom Products*, 487 F. Supp. at 854. In *Romero-Barcelo v. Brown*, 478 F.Supp. 646, 663-64 (D. P.R. 1979), *remanded on other grounds*, 643 F.2d 835 (1st Cir. 1981), *rev'd on other grounds sub nom. Weinberger v. Romero-Barcelo*, 456 U.S. 305 (1982), the district court held that the U.S. Navy violated the CWA, and was required to get a NPDES permit to drop bombs through the air into the navigable waters surrounding Puerto Rico, whether the bombs were dropped intentionally or accidentally. Finally, in *United States v. Velsicol Chemical Corp.*, 438 F. Supp. 945, 947 (W.D. Tenn. 1976), the court found discharges into the city sewer system, which, in turn, emptied into the Mississippi River to be in violation of the CWA. The court rejected the argument that pollutants must be discharged directly into navigable waters. *See id.*

(b) Courts have found discharges to groundwater that is hydrologically connected to navigable waters to constitute discharges.

In another line of cases, a number of courts have held that the discharge of a pollutant into groundwater constitutes a discharge subject to the permit requirement, if the groundwater is hydrologically connected to surface water. *Friends of the Coast Fork v. Turner*, No. 95-6105-TC, 1996 U.S. Dist. LEXIS 22083, at *7-12 (D. Or. Jul. 8, 1996); *Friends of Santa Fe County v. LAC Minerals, Inc.*, 892 F.Supp. 1333, 1357-58 (D.N.M. 1995); *Washington Wilderness Coalition v. Hecla Mining Co.*, 870 F.Supp. 983, 989-90 (E.D. Wash. 1994); *Sierra Club v. Colorado Refining Co.*, 838 F.Supp. 1428, 1434 (D. Colo. 1993); *McClellan Ecological Seepage Situation v. Weinberger*, 707 F.Supp. 1182, 1193-96 (E.D. Cal. 1988), *vacated on other grounds*, 47 F.3d 325 (9th Cir.), *cert. denied*, 516 U.S. 807 (1995).

Courts reaching this conclusion have relied upon Congress's express goal of protecting the quality of surface waters, *see Washington Wilderness Coalition*, 870 F.Supp. at 990, and Congress's “clear intent . . . to regulate waters of the United States to the fullest extent possible,” *see Friends of the Coast Fork*, 1996 U.S. District LEXIS 22083, at *11. These courts have nevertheless required pollutants to be traced from their source to surface waters for the point source to come within the purview of the CWA; a mere assertion of a general hydrological connection between ground and surface waters is insufficient. *See*

Washington Wilderness Coalition, 870 F.Supp. at 990; *Friends of the Coast Fork*, 1996 U.S. District LEXIS 22083, at *11-12.

Some other courts have found that a discharge into groundwater that is hydrologically connected to surface water is not subject to regulation under the CWA. *Exxon Corp. v. Train*, 554 F.2d 1310 (5th Cir. 1977); *Umatilla Water Quality Protective Ass'n, Inc. v. Smith Frozen Foods, Inc.*, 962 F.Supp. 1312 (D. Or. 1997); *Village of Oconomowoc Lake v. Dayton Hudson Corp.*, No. 93-C-0797, 1993 U.S. Dist. LEXIS 20058, at *9-10 (E.D. Wis. Sep. 24, 1993), *aff'd*, 24 F.3d 962 (7th Cir.), *cert. denied*, 513 U.S. 930 (1994); *Kelley v. United States*, 618 F.Supp. 1103 (W.D. Mich. 1985).

One of these cases, however, is not on point. In *Exxon v. Train*, the court rejected EPA's attempt to regulate the disposal of wastes into deep wells. *Exxon*, 554 F.2d at 1312. EPA had not argued that the disposal of wastes into wells might migrate from groundwaters back into surface waters, which are within its regulatory jurisdiction. *Id.* at 1312 n.1. The court therefore refrained from expressing any opinion on what the result would be had EPA advanced such an argument. *Id.*

In *Village of Oconomowoc Lake*, *Kelley* and *Umatilla*, the courts did specifically say that groundwater pollution hydrologically connected to surface water is not covered by the CWA. All three courts based their conclusion primarily on two factors, the organization of the statute and the statute's legislative history. The *Village of Oconomowoc Lake* court followed the opinion from the *Kelley* court.

The courts in *Kelley* and *Umatilla* said that when Congress wanted to include groundwater in portions of the CWA, it did so explicitly. *Umatilla*, 962 F.Supp. at 1318; *Kelley*, 618 F.Supp. at 1105-06. Since § 301(a) does not mention groundwater, only "navigable" waters, the *Kelley* and *Umatilla* courts reasoned that discharges to groundwater could not be regulated. *Umatilla*, 962 F.Supp. at 1320; *Kelley*, 618 F.Supp. at 1107. The courts' reasoning was unsound, however. The purpose of regulating discharges to hydrologically connected groundwater is to protect surface water, not groundwater. Pollutants added by a point source to groundwater that is hydrologically connected to surface water pollute the surface water just as surely as if the source discharged directly into the surface water itself. In *Kelley* and *Umatilla*, the courts confused what was being *protected* (surface water) with what was being *regulated* (discharges to surface water through groundwater).

Both the *Kelley* and *Umatilla* courts also relied heavily on the legislative history of the CWA in reaching their opinions. Although the legislative history may show that Congress did not intend to regulate discharges to groundwater for the sake of protecting groundwater, it is silent about whether NPDES permits may be used to regulate discharges to groundwater to protect surface water.

What *is* clear, both from the legislative history and the language of the statute, is that the CWA's purpose is to protect the Nation's surface waters to the greatest extent Constitutionally possible. When read in that context, § 301(a) requires regulation of point sources to protect surface water, even if the route a pollutant takes to surface water is indirect.

(3) The legal and factual setting in this case is readily distinguishable from the one case in which a court decided that discharges from a stack are not within the purview of the Clean Water Act.

One court in another jurisdiction has squarely confronted the question whether the operator of a stack must obtain a CWA permit, and found that it did not. *See Chemical Weapons Working Group v U.S. Army*, 111 F.3d 1485 (10th Cir. 1997). That case is limited to its facts, however, and does not relieve Acme Widget of its obligation to obtain a permit.

In *Chemical Weapons Working Group v U.S. Army*, the U.S. Army ("Army") was preparing to dispose of chemical warfare agent by incineration at the Tooele Chemical Agent Disposal Facility near Tooele, Utah. *Chemical Weapons Working Group*, 111 F.3d at 1487, 1488. The Army had Clean Air Act and RCRA permits in hand, when Chemical Weapons Working Group, Inc., Sierra Club, and Vietnam Veterans of America Foundation ("plaintiffs") filed suit claiming, among other things, that the CWA applied to Tooele's stack emissions. *Id.* The plaintiffs argued that the CWA, § 301(f), 33

U.S.C. § 1311(f), barred the atmospheric deposition of chemical warfare agent emitted from Tooele's stack.

The court refused to uphold the plaintiffs' claim for three reasons. All three reasons were peculiar to the facts of the case. First, although § 301(f) unequivocally bans the discharge of any chemical warfare agent into navigable waters, Congress knew of, approved, and funded incineration "as the baseline technology for destroying chemical weapons since 1986, when the Army first submitted its disposal program to Congress." *Chemical Weapons Working Group*, 111 F.3d at 1490. Accordingly, the court rejected the "[p]laintiffs' proposed construction of § 301(f) because it is clearly inconsistent with congressional intent to implement Tooele's incineration plan." *Id.*

The court's second reason for rejecting the plaintiffs' CWA claim was based on the nature of their allegations. The plaintiffs had merely alleged a generalized claim that stack emissions would be deposited in unspecified navigable waters. They had not alleged that chemical warfare agent traceable to the Tooele stack would be deposited in particular navigable waters. In response to the plaintiffs' allegations, the court observed that their "broad construction of the phrase 'discharge . . . into the navigable waters' under § 301(f) would necessarily result in regulation under § 301(a) of any air emission that might possibly result in atmospheric deposition into navigable waters," including car emissions. *Chemical Weapons Working Group*, 111 F.3d at 1490. The court held "that Tooele's stack emissions, unlike other indirect discharges, lack the requisite nexus to navigable waters to render them subject to regulation under [the CWA]." *Id.* at 1490 n. 3.

The court's third and final reason for rejecting the plaintiffs' CWA claim was prompted by the CWA's express and absolute prohibition on the discharge of chemical warfare agent into navigable waters. To reiterate, the plaintiffs had asserted that the § 301(f)'s prohibition rendered the emissions of chemical warfare agent from Tooele's stack illegal, because the emitted chemical warfare agent would eventually be deposited into navigable waters.

The court disagreed with the plaintiffs' assertion, saying, "Because Tooele's Clean Air Act permit specifically allows the discharges that Plaintiffs claim are barred under Clean Water Act § 301(f), applying that provision to Tooele's stack emissions would create an irreconcilable conflict between the two regulatory regimes." *Chemical Weapons Working Group*, 111 F.3d at 1490-91. In other words, since the court believed it could not give effect both to § 301(f) of the Clean Water Act and the Clean Air Act, and since the emissions were permitted under the Clean Air Act, it "decline[d] Plaintiffs' invitation to create . . . a conflict" between the Clean Water Act and the Clean Air Act. *Id.* at 1491.

None of the reasons given for rejecting the plaintiffs' claim in *Chemical Weapons Working Group* are applicable here. First, construing § 301(a) of the CWA to prohibit Acme's discharge without an NPDES permit does not contravene any Congressional intent that Acme's facility should be built or operated. Second, Friends have established that mercury that would be deposited into Lake Hypo is directly traceable to the emissions from Acme's stack, bringing Acme's stack within the purview of the CWA. Third, requiring Acme to get an NPDES permit would create no irreconcilable conflict between the Clean Air Act and the Clean Water Act. Unlike § 301(f), § 301(a) does not create an absolute prohibition on discharges; it allows discharges of mercury provided the point source gets an NPDES permit. Thus, the *Chemical Weapons Working Group* case provides no justification for Acme's operation of its stack without an NPDES permit.

C. No permit may be issued to Acme because its discharge will cause or contribute to the violation of the water quality standard for Lake Hypo.

1. A Clean Water Act permit may not be issued to a new source that will cause or contribute to the violation of a water quality standard.

A water quality standard is comprised of the following three components: (1) designated uses of the navigable waters involved; (2) water quality criteria based upon those designated uses; and (3) antidegradation policies and implementation procedures. CWA, § 303(c)(2)(A), 33 U.S.C. §

1313(c)(2)(A); 40 C.F.R. §§ 131.10-131.12. Under the EPA's "prohibition" regulation, a state may not grant a permit to a new source or new discharge that will cause or contribute to the violation of any one of the three components of a water quality standard.

The prohibition regulation bars states from issuing permits "[t]o a new source or a new discharger, if the discharge from its construction or operation will cause or contribute to the violation of water quality standards." 40 C.F.R. § 122.4(I).[2] Formerly codified at 40 C.F.R. § 122.52(I), the EPA has explained that § 122.4(I) "implements section 303(d) and 303(e) of [the] CWA by prohibiting permits for a new source . . . if its discharge will cause or contribute to the violation of a water quality standard." 45 Fed. Reg. 33,336 (1980).

Section 303(d) requires each state to "identify those waters within its boundaries for which [technology-based] effluent limitations are not stringent enough to implement any water quality standard applicable to such waters." CWA, § 303(d)(1)(A), 33 U.S.C. § 1313(d)(1)(A). A state must submit a list of these water quality limited segments ("WQLSs") to the EPA for approval or disapproval by April 1st of every even-numbered year. CWA, § 303(d)(1)(C) and (D), 33 U.S.C. §1313(d)(1)(C) and (D); 40 C.F.R. § 130.7. This submission is known as a "§ 303(d) submission." The submission must include each pollutant responsible for the impairment of a WQLS. 40 C.F.R. § 130.7(b)(4). It should also include the use designated for each segment listed and identify the WQS that is being violated. The EPA has thirty days to approve or disapprove a state's § 303(d) submission. 33 U.S.C. § 1313(d)(2).

The § 303(d) process does not end with the state's submission of a list of WQLSs, however. States must also establish pollutant loading limitations, that is to say, the maximum amount of pollution a WQLS can withstand on a daily basis without violating any applicable water quality standards. 33 U.S.C. § 1313(d)(1)(C) and (D). These pollutant load restrictions are known as "total maximum daily loads" or "TMDLs." A TMDL is the sum of individual waste load allocations for point sources and load allocations for nonpoint and natural sources of pollution. 40 C.F.R. § 130.7. TMDLs must account for seasonal variations and incorporate a margin of safety, 33 U.S.C. § 1313(d)(1)(C), which takes "into account any lack of knowledge concerning the relationship between effluent limitations and water quality," 40 C.F.R. § 130.7(c)(1), and accounts for both point and nonpoint sources, *id.* at § 130.2(I).

A state may permit a new source or a new discharge of a pollutant responsible for limiting water quality only if the state has calculated for the segment in question a "pollutant load allocation" – a Total Maximum Daily Load ("TMDL") – that both contains an allocation for future growth, and establishes compliance schedules for current permit holders to meet the water quality standard. 40 C.F.R. § 122.4(I)(1) & (2). If the state has not completed a TMDL, a new source or a new discharge simply cannot make the demonstration required by 40 C.F.R. § 122.4(I). This is the straightforward meaning of the prohibition regulation.

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[2] The regulation provides in full as follows:

"No permit may be issued:

". . .

"(I) To a new source or a new discharger, if the discharge from its construction or operation will cause or contribute to the violation of water quality standards. The owner or operator of a new source or new discharger proposing to discharge into a water segment which does not meet applicable water quality standards or is not expected to meet those standards even after the application of the effluent limitations required by sections 301(b)(1)(A) and 301(b)(1)(B) of CWA, and for which the State or interstate agency has performed a pollutants load allocation for the pollutant to be discharged, must demonstrate, before the close of the public comment period, that:

"(1) There are sufficient remaining pollutant load allocations to allow for the discharge; and

"(2) The existing dischargers into that segment are subject to compliance schedules designed to bring the segment into compliance with applicable water quality standards."

a. A Clean Water Act permit may not be issued to a new source that will worsen the existing impairment of a designated use.

As explained above, a state may not grant a permit to a new source or new discharge that will cause or contribute to the violation of any one of the three components of a water quality standard. One such component consists of the designated uses of a water body. 40 C.F.R. § 131.6(a). "*Designated uses* are those uses specified in water quality standards for each water body or segment whether or not they are being attained." 40 C.F.R. § 131.3(f) (emphasis in original). Or, under Michigan's formulation, "Designated use" means a use of surface waters of the state as established by these rules." Mich. Admin. Code r. 323.1043(x).

b. A Clean Water Act permit may not be issued to a new source that will lower the water quality with respect to a pollutant which is causing an impairment to a designated use.

Another component of a water quality standard is the antidegradation policy for the water body. 40 C.F.R. § 131.6(d). Pursuant to § 118 of the Clean Water Act, 33 U.S.C. § 1268, the EPA issued water quality guidance ("Guidance") for the Great Lakes System, which specifies how the Great Lakes states and tribes must implement the general antidegradation policy for a short list of pollutants–which includes mercury–identified as bioaccumulative chemicals of concern ("BCCs"). 40 C.F.R. § 132, Appendix E; *see* 40 C.F.R. § 132, Table 6.A; Mich. Admin. Code r. 323.1057, Table 5.

The Guidance directs that the "antidegradation standard . . . shall be applicable to any action or activity by any source, point or nonpoint, of pollutants that is anticipated to result in an increased loading of BCCs to surface waters of the Great Lakes System and for which independent regulatory authority exists requiring compliance with water quality standards." 40 C.F.R. § 132, Appendix E, Section I. The Guidance then establishes a 3-tiered antidegradation approach. The first tier provides as follows:

> Existing instream water uses, as defined pursuant to 40 C.F.R. § 131, and the level of water quality necessary to protect existing uses shall be maintained and protected. *Where designated uses of the waterbody are impaired, there shall be no lowering of the water quality with respect to the pollutant or pollutants which are causing the impairment.*"

40 C.F.R. § 132, Appendix E, § I.A (emphasis added). Similarly, Michigan's rules provide as follows:

> For all waters, the level of water quality necessary to protect existing uses shall be maintained and protected. *Where designated uses of the water body are not attained, there shall be no lowering of the water quality with respect to the pollutant or pollutants that are causing the nonattainment.*

Mich. Admin. Code R. 323.1098(2) (emphasis added).

2. The mercury that would be discharged by Acme Widget's stack and deposited in Lake Hypo will cause or contribute to the existing violation of Lake Hypo's water quality standard.

a. The water quality standard for Lake Hypo has already been violated.

One of the three components of the water quality standard for Lake Hypo–its designation as a warmwater fishery–is currently not being attained. A "warmwater fishery" is "a waterbody that contains fish species which thrive in relatively warm water, including . . . bass . . . pike . . . [and] walleye." Mich. Admin. Code r. 323.1044.

Michigan has identified Lake Hypo as a WQLS based on the failure of technology-based effluent limitations to protect the lake's warmwater fishery use. Simply put, warmwater fish species found in Lake Hypo are no longer safe to eat because of mercury contamination. Lake Hypo is subject to state-issued mercury-based fish consumption advisories for bass, pike, walleye, and several other fish species.

Pursuant to CWA § 303(d), Michigan included Lake Hypo on the list of WQLSs it submitted to the EPA, and the EPA duly approved the designation of the lake as a WQLS because of the mercury-based fish consumption advisories. Therefore, both the state and the EPA have acknowledged that Lake Hypo is experiencing a violation of its water quality standard, even without the mercury that would be deposited in the lake as a result of the new emissions that would come from Acme's stack. To date, however, no TMDL has been developed for Lake Hypo.

b. Acme's discharge will worsen the existing impairment of a designated use.

Acme's stack would increase mercury loading to Lake Hypo by nine kilograms per year, or three percent. Based on computer modeling, an increase in mercury deposition to the water will translate to an increase in mercury concentration in fish by a ratio that can vary from ten to two (10:2) to ten to ten (10:10). That means Acme's contribution of a three percent increase in the mercury load to the waters of Lake Hypo would mean an increase in mercury concentration in fish that can vary from 0.6 % to 3 %.

In other words, Acme's discharge would exacerbate the existing violation of the water quality standard applicable to the lake by making its fish even less safe to eat. Consequently, the EPA's prohibition regulation prohibits the issuance of an NPDES permit to Acme.

c. Acme's discharge will lower Lake Hypo's water quality with respect to mercury, which is impairing a designated use.

Mercury is present in the water column of Lake Hypo at a concentration of two nanograms per liter. That level already exceeds the level that the EPA deems safe for wildlife (1.3 nanograms per liter) and human health (1.8 nanograms per liter).

The deposition of additional mercury from Acme's stack will lower Lake Hypo's water quality with respect to mercury even further, violating the antidegradation policy for the lake. To reiterate, Acme will be responsible for degrading Lake Hypo's water quality an additional three percent, through the addition of nine kilograms of mercury per year.

Since mercury is already impairing Lake Hypo's designated warmwater fishery, the EPA's prohibition regulation prohibits the issuance of an NPDES permit to Acme for this reason also.

D. Acme's compliance with the Clean Air Act does not preclude regulation of its facility under the Clean Water Act.

Acme argues that the CAA is the exclusive tool for regulating a facility's emission of a pollutant into the air, even if that pollutant is traced to a particular water body. Acme also cites several provisions of the CAA that touch on the connection between air pollution and water quality, including the Great Waters Program. Not one of those provisions, however, exempts a point source from compliance with the CWA's NPDES permit requirement. As Friends have shown, the coverage of the CWA extends beyond direct discharges to the indirect discharge Acme would make to Lake Hypo.

The CAA and the CWA are certainly complementary statutes, because both serve the common goal of protecting the Nation's natural resources. They are directed at entirely different resources, however. The goal of the CAA is not to protect water quality, but to "protect and enhance the quality of the Nation's air resources so as to promote the public health and welfare and the productive capacity of its population." 42 U.S.C. § 7401 (b) (1). Acme's receipt of a permit pursuant to the CAA therefore does not translate to the achievement of the goals of the CWA.

The obligation to get permits under more than one statutory scheme is not uncommon. For instance, a utility wishing to build a hydroelectric plant that would discharge dredged material into a river had to get permits pursuant both to the CWA and the Federal Power Act. *Scenic Hudson Preservation Conference v. Callaway*, 370 F. Supp. 162, 171 (S.D.N.Y. 1973). The court stated that there is "no Power Act provision that would require the FPC to satisfy literally or even substantially the demands of §404" of the CWA, so both permits were required. *Id.* In another case, a landfill that engaged in open dumping procedures and discharged pollutants from a railroad culvert into a marsh violated both the CWA and RCRA. *See Dague v. City of Burlington*, 935 F.2d 1343, 1346-55 (2d Cir. 1991).

In this case, at least, even if the goals of the CAA will be achieved by Acme's compliance with its air permit, the goals of the CWA will not. The goals of the CWA will only be achieved by adherence to its requirements.

E. Contrary to the Resource Conservation and Recovery Act, Acme Widget would contribute to the disposal of a solid or hazardous waste which may present an imminent and substantial endangerment to health or the environment.

1. Congress established a national policy to dispose of hazardous waste such as mercury "so as to minimize the present and future threat to human health and the environment."

Congress declared the national policy of the United States to be to dispose of hazardous waste "so as to minimize the present and future threat to human health and the environment." 42 U.S.C. § 6902(b). "Hazardous waste" is a subset of "solid waste." *See id.* at § 6903(5). Among other things, "The term 'solid waste' means . . . discarded material, including solid, liquid, semisolid, or contained gaseous material resulting from industrial . . . operations . . . ." *Id.* at § 6903(27). Among other things, "The term 'hazardous waste' means a solid waste . . . which because of its quantity, concentration, or . . . chemical . . . characteristics may . . . pose a substantial present or potential hazard to human health or the environment when improperly . . . disposed of . . . ." *Id.* at § 6903(5).

The EPA must list particular hazardous wastes subject to regulation under RCRA. *See* 42 U.S.C. § 6921(b). Pursuant to this mandate, the EPA identified mercury as a hazardous waste. *See* 40 C.F.R. §261.33.

2. The Resource Conservation and Recovery Act empowers citizens to sue any person who is contributing to the disposal of any solid or hazardous waste which may present an imminent and substantial endangerment to health or the environment.

Friends may bring a citizen suit against Acme as a generator of solid or hazardous waste "who is contributing to the . . . present . . . disposal of a[] solid or hazardous waste which *may* present an imminent and substantial endangerment to health or the environment." 42 U.S.C. § 6972(a)(1)(B) (emphasis added). The use of the word "may" to preface the phrase "present an imminent and substantial endangerment to health or the environment" makes this provision an expansive one, which is "'intended to confer upon the courts the authority to grant affirmative equitable relief to the extent necessary to eliminate any risk posed by toxic wastes.'" *Dague*, 935 F.2d at 1355, *quoting United States v. Price*, 688 F.2d 204, 213-14 (3d Cir. 1982).

Friends bring this citizen suit, like most that are brought under this provision, not to enforce compliance with the RCRA regulatory program, but to address a situation analogous to a common-law public nuisance, namely the deposition of mercury into Lake Hypo. Adam Babich, *Is RCRA Enforceable by Citizen Suit in States with Authorized Hazardous Waste Programs?*, 23 Envtl. L. Rep. 10536 (Sep. 1993). As Friends shall demonstrate, all the conditions for the prosecution of this citizen suit are present in this case, and warrant the entry of the injunctive relief Friends seek.

a. “Solid waste” includes emissions of mercury into the air that are deposited into water.

RCRA regulates emissions of solid and hazardous wastes to air, water and soil. EPA itself has stated that “Section 7003 authority has no media limitation. . . . CERCLA and RCRA apply to releases to all media (i.e., ‘the environment’ defined broadly).” EPA Enforcement Authority Guidance, 56 Fed. Reg. 24,393, 24,398 (1991).[3] According to one commentator:

> *EPA routinely regulates air emissions as hazardous waste under RCRA.* See 40 C.F.R. pt. 264, subpts. AA and BB (1993) (containing RCRA regulations for “Air Emission Standards for Process Vents” and “Air Emission Standards for Equipment Leaks”). Similarly, EPA’s RCRA standards for boilers and industrial furnaces specify “standards to control organic (air) emissions,” “standards to control particulate matter (air emissions),” “standards to control metals (air) emissions,” and “standards to control hydrogen chloride and chlorine gas emissions.” 40 C.F.R. ss. 266.104-.107 (1993).

Adam Babich, *RCRA Imminent Hazard Authority: A Powerful Tool For Businesses, Governments, and Citizen Enforcers*, 24 Envtl. L. Rep. 10122 (Mar. 1994) (emphasis added).

One case demonstrates RCRA’s broad application. In *Orchard Lane Road Assoc.*, a citizen group brought a RCRA action against a silica production plant to protest the plant’s silica dust emissions. The defendant filed a summary judgment motion, which the court denied. The court held that the citizens could maintain their suit because silica dust emissions were “solid waste” and therefore within the purview of RCRA. *Orchard Lane Road Assoc.*, 34 ERC at 1750. Specifically, the court explained that a RCRA action could be asserted against any person engaged in the “disposal of any solid or hazardous waste.” *Id.* at 1749. Disposal, the court explained, includes the “discharge, deposit, injection, dumping, spilling, leaking, or placing of any solid waste or hazardous waste into or on any land or water.” *Id.*, *quoting* 42 U.S.C. § 6903(3). Moreover, the court reasoned that “the ‘solid waste’ definition covers what Plaintiff is alleging here, the silica dust emission, which . . . probably would be solid, although very small particulates.” *Id.* at 1750.

As the mercury emitted by Acme’s stack is carried by the wind across Lake Hypo, some portion of it will condense into a liquid or solid form and be deposited into the lake. That brings Acme’s emission of mercury within RCRA’s purview.

b. “Imminent” requires that a risk of future harm exists.

RCRA is designed to prevent improper disposal of hazardous wastes in the future, not simply in emergencies. *See Dague*, 935 F.2d at 1355-56. “A finding of ‘imminency’ does not require a showing that actual harm will occur immediately so long as the risk of threatened harm is present.” *Id.* at 1356. “‘An “imminent hazard” may be declared at any point in a chain of events which may ultimately result in harm to the public.’” *Id.*, *quoting Environmental Defense Fund v. Environmental Protection Agency*, 465 F.2d 528, 535 (D.C. Cir. 1972). Thus, Acme’s stack presents an imminent hazard, because Michigan’s issuance of an air permit authorizes the operation of the stack at any time, which may result in harm to the public and the environment.

c. “Substantial” requires some cause for concern that someone is exposed to risk, not a quantification of risk.

In determining whether an endangerment is substantial, a court should err on the side of protecting the public health, welfare, and environment. *Cf. United States v. Conservation Chemical Company*, 619 F. Supp 162, 194 (W.D. Missouri 1985) (interpreting the meaning of the phrase “imminent and substantial endangerment” in § 106 of the Comprehensive Environmental Response, Compensation, and Liability

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[3] Section 7003 of RCRA is codified at 42 U.S.C. § 6973 (West 1999). The provision gives EPA the authority to initiate civil and administrative actions “upon receipt of evidence that the past or present handling, storage, treatment, transportation or disposal of any solid waste or hazardous waste may present an imminent and substantial endangerment to health or the environment.” 42 U.S.C. § 6973 (West 1999).

Act, by reference to interpretations of the same phrase in RCRA § 6973). Accordingly, "the word 'substantial' does not require quantification of the endangerment (e.g., proof that a certain number of persons will be exposed, that 'excess deaths' will occur, or that a water supply will be contaminated to a specific degree)." *Id.* "[A]n endangerment is substantial if there is reasonable cause for concern that someone or something may be exposed to a risk of harm by a release or a threatened release of a hazardous substance if remedial action is not taken, keeping in mind that protection of the public health, welfare and the environment is of primary importance." *Id.*

Under this standard, Acme's generation and disposal of mercury in Lake Hypo causes a substantial endangerment. Although Friends may not be able to quantify with exactitude the magnitude of the increase, mercury concentrations in fish tissue will increase from 0.6% to 3% as a result of the operation of Acme's stack. Furthermore, those who do not or cannot heed fish consumption advisories, especially children and subsistence populations, will have greater exposure to the neurological risks associated with the ingestion of mercury.

d. "Endangerment" does not require proof of actual harm, only a threatened or potential harm.

Endangerment does not require proof of actual harm, only a threatened or potential harm. *See Price v. U.S. Navy*, 39 F.3d 1011, 1019 (9th Cir. 1994) ("Courts have consistently held that 'endangerment' means a threatened or potential harm and does not require proof of actual harm."); *U.S. v. Ottati & Goss, Inc.*, 630 F. Supp. 1361, 1394 (D.N.H. 1985) ("One can be endangered without actually being harmed . . . [but] some risk of harm is necessary.").

For example, in *Buggsi, Inc. v. Chevron U.S.A., Inc.*, 857 F. Supp. 1427 (D. Or. 1994), a property owner brought suit against Chevron, and its predecessor-in-title, asserting a citizen suit under RCRA (along with several common law claims) for groundwater contamination by petroleum. *Buggsi*, 857 F. Supp. at 1429. The defendants moved for summary judgment motion contending, *inter alia*, that Buggsi had presented no evidence of an imminent and substantial endangerment. *Id.* at 1430. The court denied the defendants' motion, finding sufficient evidence to support Buggsi's RCRA claim, based on expert witness testimony from Oregon's Department of Environmental Quality. *Id.* at 1431. For instance, the court found the DEQ had "verified that the groundwater pathway has been affected." *Id.* Regarding RCRA's endangerment requirement, the court said:

> 'Endangerment,' as used in federal statutes such as the RCRA, does not refer to actual harm but to a 'threatened or potential harm.' 'While the risk of harm must be 'imminent' . . . the harm itself need not be.' *If an error is to be made in applying the endangerment standard the error must be made in favor of protecting public health, welfare and the environment.* . . . [T]he word 'endangerment' does not require quantitative proof of actual harm.

Id., *quoting Conservation Chemical Company*, 619 F. Supp. at 193-94 (emphasis added). Hence, the court concluded that the plaintiff's expert documentary evidence demonstrated endangerment to public health and the environment. Accordingly, the court denied the defendants' summary judgment motion.

In another groundwater contamination case, the plaintiff, a Florida shopping center, obtained injunctive relief against one of its tenants, a dry cleaner which regularly used–and spilled–the chemical perchloroethylene ("perc") in its business. *Fairway Shoppes Joint Venture v. Dryclean U.S.A. of Florida, Inc.*, NO. 95-8521-CIV-HURLEY, 1996 U.S. Dist. LEXIS 22364 (S.D.N.Y. Mar. 11, 1996). The injunction required the dry cleaner to cease operation while it assessed the extent of the groundwater contamination it had caused, and until it provided the court a remediation plan designed to prevent further "migration of the contaminant plume." *Id.* at *29-30. The court analyzed the statutory language–"may present an imminent and substantial endangerment"–and concluded that the phrase "has been construed to mean that a plaintiff need only demonstrate a measurable potential risk of harm." *Id.* at *20. The court said the following in support of its interpretation:

> First, it is significant that the word 'may' precedes the standard of liability: 'this is expansive language,' which is 'intended to confer upon the courts the authority to grant affirmative equitable relief to the extent necessary to eliminate any risk posed by toxic wastes.' . . . Second, 'endangerment' means a threatened or potential harm and does not require proof of actual harm. . . . Finally, the word 'substantial does not require quantification of the endangerment . . . an endangerment is substantial if there is some reasonable cause for concern that someone or something may be exposed to a risk of harm by a release or a threatened release of a hazardous substance if remedial action is not taken.'

Id. at *20-21, *quoting Lincoln Properties v. Higgins*, No. S-91-760 DFL/GGH, 1993 U.S. Dist. LEXIS 1251, at *20-21 (E.D. Cal. Jan. 21, 1993). The court found "reasonable cause for concern" in the assembled evidence:

> *A plume of toxic contaminants migrating toward a source of potable water supply for Palm Beach County unquestionably meets the 'imminent and substantial endangerment' standard of RCRA.* The Court need not–and should not–wait until the contaminated water is actually detected in public water supply wells before taking action.

Fairway Shoppes, 1996 U.S. Dist. LEXIS 22364, at *17 (emphasis supplied). Furthermore, the court also found contaminated groundwater constituted an imminent and substantial endangerment to the environment: "The statute speaks of endangerment to health or the environment . . . [which] appears to include air, soil and water. Neither the statute nor the case law interposes an additional requirement that humans or other life forms be threatened." *Id.* at *23. In other words, the defendant's release of perc constituted an imminent and substantial endangerment to public health *and* the environment. Accordingly, the court granted the plaintiff injunctive relief: "A balancing of the equities in this case . . . weighs in favor of requiring [the Defendant] to take reasonable measures to protect the public health and the environment." *Id.* at *29.

Like the defendants in *Buggsi* and *Fairway Shoppes*, Acme may endanger the public health and environment by emitting mercury from its stack. Annually, nine kilograms of mercury from Acme's stack would be deposited on the surface of Lake Hypo, transformed into methyl mercury–which poses the greatest threat to human and ecosystem health, and be concentrated in fish tissue. Hence, a hazardous material spewed from Acme's stack will contaminate Lake Hypo in at least as identifiable a way as the contaminants in *Buggsi* and *Fairway Shoppes* contaminated or threatened the contamination of groundwater.

The *Fairway Shoppes* court recognized the endangerment of Palm Beach's subsurface potable water supply. The water quality of Lake Hypo is similarly endangered. The *Buggsi* court chose to "err" on the side of protecting public health, welfare and the environment. This court has the same opportunity: to protect the environment of Lake Hypo, and the health of the public that consumes its fish, by enjoining Acme's disposal of mercury into Lake Hypo.

V. CONCLUSION

For the foregoing reasons, the court should grant Friends' motion for summary judgment.

Respectfully submitted,

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APPENDIX E

IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF MICHIGAN

FRIENDS OF LAKE HYPO,
Plaintiff,

V.

ACME WIDGET,
Defendant.

DEFENDANT'S BRIEF IN SUPPORT OF MOTION FOR SUMMARY JUDGMENT

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ISSUES PRESENTED

1. Whether FOLHY's claim that Acme's emissions of gaseous mercury into the atmosphere in compliance with all applicable state and federal air requirements nevertheless constitute a point source discharge into a surface water that requires a National Pollutant Discharge Elimination System permit under the Clean Water Act, should be dismissed as contrary to the Clean Water Act and its authoritative interpretation by the U.S. Environmental Protection Agency.
2. Whether, if an NPDES permit were to be required, this Court should allow Acme the opportunity to seek a permit rather than permanently enjoining Acme's operations based on the assumption that it would be impossible under any circumstances for Acme to qualify for a permit.
3. Whether FOLHY's claim that Acme's emissions of gaseous mercury into the atmosphere constitute solid or hazardous waste posing an imminent and substantial endangerment under the Resource Conservation and Recovery Act ("RCRA") should be dismissed based on RCRA's statutory exclusion of uncontained gaseous material and the Michigan Department of Environmental Quality's determination, through a multipathway risk assessment, that the emissions present no such endangerment.

STATEMENT

1. Nature of the Case

Friends of Lake Hypo ("FOLHY") brings this action against Acme Widget ("Acme") under the "citizen suit" provisions of section 505(a) of the Federal Water Pollution Control Act, commonly known as the Clean Water Act ("CWA"), 33 U.S.C. § 1365(a); and section 7002(a)(1)(B) of the Resource Conservation and Recovery Act ("RCRA"), 42 U.S.C. § 6972(a)(1)(B). It alleges that Acme is in violation of the Clean Water Act because its stack emissions of mercury, although in compliance with an air permit issued by the State, will constitute a point source discharge into Lake Hypo without a National Pollutant Discharge Elimination System ("NPDES") permit as required by CWA section 402, 33 U.S.C. § 1342. FOLHY goes a step further and argues that, although no NPDES permit proceeding has taken place, Acme will be unable to obtain the NPDES permit, if one were to be required, because it claims that Acme's operations will cause or contribute to the violation of water quality standards and that because of this alleged inability to obtain the necessary permit, the court should enjoin entirely Acme's operations.

FOLHY also alleges under RCRA that the gaseous emissions of mercury from Acme's stack, although approved by the State after conducting a multipathway risk assessment, nevertheless will present an imminent and substantial endangerment to health or the environment based on the predictions of conservative and unvalidated air modeling.

Acme and FOLHY have filed cross-motions for summary judgment with this court.

2. Statement of Facts

Acme incorporates by reference the facts presented in the Event Description for this case, with the following additional statements.

Modeling was used in an attempt to predict an estimated amount of mercury that might be added by Acme's stack emissions to Lake Hypo. These emissions will comply with all applicable air emission requirements, including the use of Maximum Achievable Control Technology ("MACT"). Many of the key assumptions used in the modeling for sake of simplification are overly conservative, thus producing an overestimate of the amount of mercury predicted to result from Acme's emissions. These overly conservative assumptions include the assumption that absolutely none of the gaseous mercury chloride emitted by Acme will be chemically reduced in the atmosphere at any point above the land or any of the 1115 square kilometers (approximately 436 square miles) of Lake Hypo. This assumption is acknowledged to result in an overprediction of the mercury deposition attributed to Acme. In addition, the modeling assumes that no other sources of mercury, other than Acme, contribute a significant amount of mercury chloride to the background deposition to Lake Hypo. This unrealistic assumption thus overstates the percentage increase of mercury in Lake Hypo predicted to result from Acme's stack emissions. The modeling further assumes that all forms of mercury deposited in Lake Hypo are transformed into the methylated form of mercury at the same rate. The modeling thereby unrealistically assumes that all forms of mercury are created equal with respect to methylation. The modeling then compounds this overly conservative assumption by further assuming, as an upper bound, that all of the mercury deposited in Lake Hypo will end up in fish tissue in a perfectly linear relationship. It then assumes, as a lower bound, the 10:2 relationship recently cited by EPA's Science Advisory Board, although even less mercury in the water may end up in fish tissue in the real world.

After applying all these overly conservative assumptions, the model predicts that Acme's permitted emissions of mercury to the air may result in only a 0.6% - 3% increase in mercury levels in fish found in Lake Hypo. Because of the self-acknowledged, conservative overestimates made by the modeling, the predicted increase more accurately should be stated as less than 0.6% - less than 3%. There are no actual monitoring data to validate the model's predictions of the potential effect of Acme's emissions.

Based on the overly conservative assumptions of the air modeling, the Michigan Department of Environmental Quality ("MDEQ") conducted a multipathway risk assessment as part of its air permitting process under Part 55 of the Natural Resources and Environmental Protection Act ("NREPA"), M.C.L. §§ 324.5501-.5542. Based even on the overly conservative predictions of the modeling, MDEQ determined in issuing the air permit that Acme's emissions will not pose any unacceptable risk to human health, safety, welfare or the environment.

SUMMARY OF ARGUMENT

1. FOLHY's lawsuit contorts the Clean Water Act and RCRA to collaterally challenge a Clean Air Act permit (or the MACT standards embodied in that permit) whose issuance FOLHY failed to challenge directly. FOLHY's claim that Acme's air emissions in compliance with its Clean Air Act permit nevertheless require a Clean Water Act permit as a "point source discharge" based on modeled air deposition to Lake Hypo is contrary to the statutory language, EPA's authoritative statements that air deposition constitutes a "nonpoint source" under the Clean Water Act, caselaw and nearly 30 years of consistent permit history. EPA has consistently stated that air deposition is a nonpoint source under the Clean Water Act, and thus not subject to NPDES permit requirements. A reviewing court must defer to EPA's reasonable construction of the statute it administers. That interpretation is consistent with the nearly 30-year history of permitting under the Clean Water Act. A review of the Clean Water Act and Clean Air Act demonstrates that EPA's interpretation not only is reasonable but is the only proper reading of the statutes. Congress established the Clean Air Act as the statutory mechanism to directly regulate the emission of air pollutants into the ambient air and did not authorize duplicate and potentially inconsistent permitting under the Clean Water Act. Congress' intentions are exemplified by its amendment of the Clean Air Act in 1990 to require EPA to evaluate the adequacy of section 112 of that act to prevent serious adverse effects associated with air deposition of hazardous air pollutants into the Great Lakes. Congress directed EPA to issue such further Clean Air Act standards or control measures as may be necessary and appropriate to prevent those effects. Finally, the only reported case on point squarely rejects FOLHY's arguments.

2. Even assuming, *arguendo*, that Acme's air emissions require an NPDES permit, FOLHY wrongly claims that it would be impossible for Acme to qualify for such a permit. As an initial matter, this court lacks jurisdiction to issue a declaratory judgment that Acme could not obtain an NPDES permit as a matter of law. Even if this claim is considered, Acme's air deposition does not constitute a lowering of water quality under MDEQ's antidegradation rule. Furthermore, the Clean Water Act's Total Maximum Daily Load ("TMDL") process allows MDEQ to allocate permissible loadings of mercury to Lake Hypo among existing and future point and nonpoint sources. FOLHY's requested permanent injunction improperly seeks to preempt the Clean Water Act permit process and presents issues that are not ripe for review.

3. Under RCRA, a material must qualify as a "solid waste" before it can be considered a "hazardous waste." RCRA excludes uncontained gaseous material from the definition of "solid waste," and EPA has consistently interpreted RCRA to do so. Because Acme's emissions constitute uncontained gaseous material, they are neither a "solid waste" nor a "hazardous waste." FOLHY's RCRA citizen suit is predicated upon its claim that Acme's air emissions constitute solid or hazardous waste that presents an imminent and substantial endangerment. Accordingly, FOLHY's RCRA claim must be dismissed for lack of subject matter jurisdiction. Even if FOLHY could establish jurisdiction, its claim should be dismissed as a collateral attack on Acme's air emission permit and as contrary to MDEQ's determination, based on a multipathway risk assessment, that Acme's emissions present no unacceptable risk to health or the environment.

ARGUMENT

I. FOLHY'S CWA CITIZEN SUIT CLAIMS FAIL FOR LACK OF JURISDICATION.

A. The Clean Water Act Does Not Require an NPDES Permit for Air Emissions of Mercury in Compliance with Acme's Air Permit

1. Statutory and Regulatory Background

Congress created the NPDES permit system under the Clean Water Act, to regulate certain discharges of pollutants into waters of the United States. Clean Water Act section 301(a), 33 U.S.C. § 1311(a), provides in pertinent part that "except as in compliance with . . . sections 1342 [402] . . . of this title, the discharge of any pollutant by any person shall be unlawful." While the United States Environmental Protection Agency ("EPA") is responsible for administering the NPDES permit system, it may delegate NPDES permit issuing authority to the states. 33 U.S.C. § 1342(b). EPA has delegated such authority to the State of Michigan and, consequently, the NPDES permit program within the State of Michigan is administered by MDEQ. FOLHY's Clean Water Act count is premised upon a violation of Clean Water Act section 301(a) as a result of an alleged discharge of a pollutant without an NPDES permit. Under Clean Water Act section 502(12), 33 U.S.C. § 1362(12), the term "discharge of pollutants" means, in pertinent part, "any addition of any pollutant to navigable waters from any point source." However, Acme's stack emissions in compliance with its air permit do not constitute a "discharge of pollutants" within the meaning of that section.

2. EPA Has Authoritatively Interpreted the Clean Water Act to Include Atmospheric Deposition as a Nonpoint Source and This EPA Interpretation is Entitled to Deference

EPA has consistently interpreted the Clean Water Act to classify atmospheric deposition of pollutants into waters of the United States as nonpoint sources, not point source discharges subject to NPDES permit requirements. United States Supreme Court precedent requires judicial deference to this interpretation by EPA.

It is well established that if a statute is silent or ambiguous on "the precise question at issue," a court must defer to any reasonable construction chosen by the agency that administers that statute. *Chevron, U.S.A., Inc. v. NRDC,* 467 U.S. 837, 843 (1984). The *Chevron* deference principle is based upon respect for the proper institutional roles of the judiciary and administrative agencies and thus applies whether the agency interpretation arises from a rulemaking or otherwise. *Id.* at 865-66; *see also Heckler v. Chaney,* 470 U.S. 821, 831-32 (1985). The standard of review is very deferential: the agency's construction need not be the one the court itself would adopt or the one it believes would most effectively implement Congressional policy. *Chevron,* 467 at 843 n. 11, 865-66.

The Supreme Court has applied the *Chevron* deference principle to agency interpretations that are not embodied in regulations. *See, e.g., FDIC v. Philadelphia Gear Corp.,* 476 U.S. 426 (1986) (deference to agency interpretation expressed in a transcript of a meeting with bank officials); *United States v. City of Fulton,* 475 U.S. 657 (1986), (deferring to agency interpretation not embodied in regulations). Indeed, in a series of three cases analogous to the one presented here, the Sixth Circuit and District of Columbia Circuit rejected claims that dams were point source dischargers subject to NPDES permit requirements. The Sixth Circuit deferred to EPA's interpretation of the Clean Water Act expressed not in any regulation but in EPA's consistent treatment of "dams as nonpoint sources of pollution which are not subject to the discharge permit requirements of section 402." *United States ex rel. Tennessee Valley Auth. v. Tennessee Water Quality Control Bd.,* 717 F.2d 992, 999 (6th Cir. 1983), *cert. denied,* 466 U.S. 937 (1984). The Sixth Circuit likewise deferred to EPA's interpretation that dams are nonpoint sources in a citizen suit brought against a Michigan hydroelectric facility by FOLHY's sister organization, the National Wildlife Federation. *National Wildlife Fed'n v. Consumers Power Co.,* 862 F.2d 580 (6th Cir. 1988). The District of Columbia Circuit earlier had rejected a similar challenge brought by the National Wildlife Federation against dam-induced water quality changes in *National Wildlife Fed'n v. Gorsuch,* 693 F.2d 156, 170 (D.C. Cir. 1982). The *Gorsuch* court recognized that "the power to define point and nonpoint sources is vested in EPA." 693 F.2d at 173 n. 54 (quoting *Natural Resources Defense Council, Inc. v. Costle,* 568 F.2d 1369, 1382 (1977)).

EPA has clearly stated that atmospheric deposition is classified as a nonpoint source under the Clean Water Act, which, therefore, is not subject to NPDES permit requirements. Most recently, EPA so stated in the preamble to its proposed revisions to the TMDL regulations. 64 Fed. Reg. 46012 (Aug. 23, 1999). That proposal includes "clarifying revisions" to the current definition of "load allocations." In the TMDL process, "wasteload allocations" are made for existing and future point sources, whereas load allocations are made only for existing and future nonpoint sources and for natural background. EPA's proposal expressly defines such load allocations as "[t]he portions of a TMDL's pollutant load allocated to *nonpoint sources of a pollutant, including atmospheric deposition* or natural background sources." *Id.* at 46046 (emphasis added). EPA explained: "These proposed revisions explicitly include atmospheric deposition as a nonpoint source of pollutants, *codifying EPA's current interpretation.*" *Id.* at 46016 (emphasis added).

It is important to recognize that although EPA's statement was made in a proposed rulemaking, it merely codifies EPA's longstanding and oft-stated interpretation. For example, more than six years ago, in the preamble to the proposed Water Quality Guidance for the Great Lakes System (commonly referred to as the "Great Lakes Initiative" or "GLI"), EPA referred to "nonpoint sources of pollution (e.g., any diffuse source of pollutant loadings to the waters of the Great Lakes System, such as . . . air deposition . . .)." 58 Fed. Reg. 20802, 20830 (April 16, 1993). EPA reiterated its interpretation throughout the final GLI regulations. 60 Fed. Reg. 15366 (March 23, 1995). *See, e.g.*, 60 Fed. Reg. at 15416 (nonpoint sources include "background," which includes loadings from "atmospheric deposition"), 15388 ("nonpoint sources include . . . direct wet and dry deposition"), 15371 (referring to comments that point sources contribute only a minor portion of the total mercury loading to the Great Lakes System as contrasted to atmospheric deposition). EPA yet again classified air deposition as a nonpoint source in its public notice of the draft Lakewide Management Plan for Lake Michigan under section 118(c)(4) of the Clean Water Act, 33 U.S.C. 1268(c)(4). 60 Fed. Reg. 22381 (May 5, 1995). *See, e.g.*, 60 Fed. Reg. at 22384 (discussing air deposition and other nonpoint sources), 22385 (contrasting "NPDES facilities" with "atmospheric deposition"), 22387 (contributions from "air deposition . . . or other nonpoint sources"). *See also* 61 Fed. Reg. 1930, 1931 (Jan. 24, 1996) ("loads allocated to nonpoint sources (e.g. atmospheric inputs")). EPA again classified sources of atmospheric deposition as nonpoint sources in its 1987 Nonpoint Source Guidance. EPA Office of Water, *Nonpoint Source Guidance* (1987) at 3.

EPA's discussion of air deposition in its proposed revisions to the NPDES program and federal antidegradation policy, a companion rule to its proposed TMDL rule revisions, is instructive:

> EPA recognizes that air deposition contributes to some of the water quality problems that exist today. EPA is considering whether to allow an offset from an air pollution source *emitting* the same pollutant the new or significantly expanded discharger is proposing to *discharge*. EPA would consider this only where the *air pollution source directly affects the waterbody in the vicinity of* the new or significantly expanded *discharge*. EPA invites comment on how some of the additional requirements related to obtaining an offset would be met if EPA allowed *dischargers* to obtain offsets from an air pollution source(s)."

64 Fed. Reg. 46058, 46070 (Aug. 23, 1999) (emphasis added). EPA's discussion is significant because it acknowledges the difference between an air *emission* source, regulated under the Clean Air Act, and a water pollutant *discharge*, regulated under the NPDES program. EPA recognizes that NPDES permit requirements do not apply to an air pollution source, even if it "*directly affects the waterbody*." *Id.* (emphasis added).

Consistent with its determination that air emission sources are not subject to regulation as point source discharges, neither EPA (nor any NPDES-approved state) to our knowledge has ever required an NPDES permit for such sources. FOLHY cannot point to any NPDES permit to the contrary out of the many thousands issued in the 27 years of the NPDES program. *Cf. National Wildlife Fed'n v. Consumers Power Co.*, 862 F.2d at 587 (relying in part on the fact that EPA had not required an NPDES permit at 34 other pumped storage facilities). Neither EPA nor MDEQ has required Acme to obtain an NPDES permit for air emissions from its stack. Even FOLHY does not, and rationally could not, claim that either EPA or MDEQ has taken the position that an NPDES permit is required for air emission sources in compliance with a Clean Air Act permit. More importantly, FOLHY fails to even discuss EPA's interpretation.

Congressional statements support EPA's interpretation. For example, the Senate Report accompanying S. 2093 states that "[n]onpoint pollution enters the nation's waters from many sources: . . . including atmospheric deposition (affecting the Great Lakes and Chesapeake Bay, for example)." S. Rep. No. 257, 103rd Cong., 2nd Sess. 1994, 1994 WL 184553, *97. Similarly, the House Report accompanying H.R. 961 states that "the major remaining source of water pollution comes from diffuse sources, known as nonpoint sources. These include . . . atmospheric deposition and contaminated sediments." H.R. Rep. 112, 104th Cong. 1st Sess. 1995, 1995 WL 262332, *976.

EPA's considered interpretation is consistent with the Clean Water Act and Clean Air Act and must be deferred to under *Chevron* as a reasonable construction. The inescapable conclusion is that air emissions are not subject to the Clean Water Act's permit requirement.

3. Congressional Intent Makes Clear that Clean Water Act Discharge Permits Are Not Required for Acme's Air Emissions

Not only is EPA's interpretation of the Clean Water Act reasonable, but it is correct. Congress enacted the 1970 Clean Air Act as the comprehensive mechanism to regulate emissions of pollutants into the ambient air and the 1972 Clean Water Act as the comprehensive mechanism to regulate discharges of pollutants into waters of the United States. The same Congressional committees and leaders were instrumental in enacting both the 1970 Clean Air Act and 1972 Clean Water Act. The regulatory features of one statute frequently reflect legislative ideas developed in connection with the other statute. The two statutes are media specific. Examination of the two statutes makes clear that Congress intended the Clean Air Act as the exclusive statutory mechanism to regulate the emission of air pollutants into the ambient air. FOLHY's Clean Water Act claim would derail Congress' carefully crafted approach. It would include as a point source discharge subject to Clean Water Act permitting every addition of a pollutant from a permitted Clean Air Act emissions stack that reaches a surface body. Such an immense expansion of Clean Water Act permitting jurisdiction without an explicit mandate by Congress must be rejected.

A comparison of key Clean Air Act and Clean Water Act definitions illustrates EPA's separate jurisdiction under the two statutes. For example, Congress' definition of "pollutant" in the 1972 Clean Water Act clearly borrowed from its definition of "air pollutant" in the 1970 Clean Air Act. The Clean Air Act's definition of "air pollutant" in section 302(g), 42 U.S.C. § 7602(g), includes "any physical, chemical, biological, radioactive . . . substance or matter which is *emitted* into or otherwise enters the ambient air." (Emphasis added.) Clean Water Act section 502(6), 33 U.S.C. § 1362(6), defines "pollutant" to include "chemical wastes, biological materials, radioactive materials, . . . and industrial, municipal, and agricultural waste *discharged* into water." (Emphasis added.) Congress elsewhere has reiterated its view that "emissions" are distinct from "discharges." For example, in the Comprehensive Environmental Response, Compensation and Liability Act ("CERCLA"), Congress, in defining a "release," used both the terms "emitting" and "discharging" to indicate that they are separate activities. 42 U.S.C. § 9601(22). Congress crafted two separate, comprehensive regulatory schemes: one under the Clean Air Act to regulate the emission of pollutants into the ambient air and a second under the Clean Water Act to regulate the discharge of pollutants into the nation's waters. A comparison of the Clean Water Act's definition of "effluent limitation" and the Clean Air Act's definition of "emission limitation" shows a similar division in jurisdiction. The Clean Water Act defines "effluent limitation" as a "restriction established by a State or [EPA] on quantities, rates, and concentrations of chemical, physical, biological, and other constituents which are *discharged* from point sources into navigable waters . . .." 33 U.S.C. § 1362(11). (Emphasis added.) The Clean Air Act defines "emission limitation" as a "requirement established by the State or [EPA] which limits the quantity, rate or concentration of *emissions* of air pollutants . . .." 42 U.S.C. § 7602(k). Congress in the Clean Water Act drew heavily upon the Clean Air Act, but was careful to distinguish the Clean Water Act's jurisdiction over discharges into water from the Clean Air Act's jurisdiction over emissions into the air. In doing so, Congress demonstrated its intent to avoid duplicative or inconsistent regulation under the two statutes.

FOLHY's claim that the Clean Air Act was not designed to address, and does not address, the problem of atmospheric deposition is nonsense. Congress explicitly chose the Clean Air Act as the vehicle for EPA regulation of stack emissions of air pollutants, including those that may have an effect on water quality through atmospheric deposition. Congress in Clean Air Act section 103(e), 42 U.S.C. § 7403(e), directed EPA to conduct a research program that includes an "evaluation of the effects of air pollution on water quality, including assessments of the short-term and long-term ecological effects of acid deposition and other atmospherically derived pollutants on surface water (including wetlands and estuaries) and groundwater." Congress in Title IV of the Clean Air Act established an entire regulatory program to address the effects on surface waters and other natural resources of acid deposition resulting from air emissions of sulfur and nitrogen oxides. 42 U.S.C. §§ 7651-7651o. Congress clearly recognized that this program would address acid deposition that may affect aquatic resources. *See* Section 404 of Public L. 101-549, 104 Stat. 2399 (1990) (EPA's report to Congress must address the feasibility and effectiveness of acid deposition standards to protect sensitive aquatic and terrestrial resources).

Perhaps most tellingly, Congress in 1990 chose to amend section 112 of the Clean Air Act, which addresses hazardous air pollutants, to expressly require EPA to "conduct a program to identify and assess the extent of atmospheric deposition of hazardous air pollutants . . . to the Great Lakes" and certain other waters (the "Great Waters Program"). As part of this Great Waters Program, EPA is required to "evaluate any adverse effects to public health or the environment caused by such deposition . . . and assess the contribution of such deposition to violations of water quality standards established pursuant to the [Clean Water Act] . . .." 42 U.S.C. § 7412(m)(1)(D). Congress further required EPA to "determine whether the other provisions of *this section* [112] are adequate to prevent serious adverse effects to public health and serious or wide-spread environmental effects . . . associated with atmospheric deposition to the Great Lakes . . . of hazardous air pollutants (and their atmospheric transformation products)." 42 U.S.C. 7412(m)(6) (emphasis added). EPA was required to report the results of its determination to Congress and based on that determination to "promulgate, *in accordance with this section*, such further emission standards or control measures as may be necessary and appropriate to prevent such effects . . .." *Id.* (emphasis added).

Thus, Congress, when addressing the precise concern raised by FOLHY – the potential effects on the Great Waters of atmospheric deposition of hazardous air pollutants – addressed that concern under the Clean Air Act and directed EPA to promulgate additional standards under the Clean Air Act as necessary to prevent such effects. The Senate Report on the 1990 Clean Air Act Amendments that created the Great Waters Program further evidences this Congressional intent. The Senate Report states that atmospheric deposition of hazardous air pollutants to the Great Lakes region may be recognized by EPA when setting emission standards or residual risk standards under Section 112. S. Rep. 101-228, 101st Cong., 1st Sess. 1989, 1989 WL 236970, *127-28. Congress expressly patterned the Section 112 technology-based approach applicable to air emission sources of hazardous air pollutants on the Clean Water Act's technology-based standards approach to effluent discharges of toxic pollutants:

> The amendments to section 112 made by this legislation are intended to accelerate the regulation of hazardous air pollutants by creating a program of technology-based standards similar to those which have already been implemented under the Clean Water Act for control of toxic *effluent discharges to surface waters* from major industrial sources. The legislation will establish *emission standards for the major sources* of a list of *air pollutants* . . ..

Id. at *128-29 (emphasis added). Congress could not have been clearer in demonstrating its intent to separate permit requirements under the Clean Air Act for air emission sources from permit requirements under the Clean Water Act for effluent dischargers.

1. FOLHY's argument never explains why Congress chose to enact the Great Waters Program under the Clean Air Act, rather than the Clean Water Act. Moreover, Congress placed the Great Waters Program in Section 112, which establishes a permit program for emission sources of hazardous air pollutants that is *expressly* patterned after the NPDES permit program for toxic effluent discharges. Surely, had Congress intended or contemplated that these air emission sources also were subject to dual permitting under the NPDES program it would have made some mention of that fact. It did not do so because it did not authorize such extraordinary dual permitting. The fact that Congress, in addressing the issue of atmospheric deposition of mercury and other hazardous air pollutants to the Great Lakes, did not once cite the NPDES permit program under the Clean Water Act speaks volumes. *Cf. National Wildlife Fed'n v. Consumers Power Co.*, 862 F.2d at 588 ("When Congress recently focused on the water pollution problem caused by dams . . . it did not refer to the NPDES program or require NPDES permitting in the amendment."). EPA itself in its notice of determination under the Great Waters Program stated that "the legal authorities contained *in section 112* of the [Clean Air Act] are adequate to prevent serious adverse effects to public health and . . . [the environment] . . . associated with atmospheric deposition of [hazardous air pollutants] and their atmospheric transformation products to the Great Waters." 63 Fed. Reg. 14090, 14091 (March 24, 1998) (emphasis added). Indeed, EPA's determination under Section 112(m) never even discusses the NPDES permit program. Moreover, Congress did not establish any comparable program under the Clean Water Act to address atmospheric deposition. FOLHY's preferred approach may be to subject air emission sources to duplicate or inconsistent NPDES permit requirements. However, it is not Congress' chosen approach.

4. Nearly 30 Years of History Under the CWA Demonstrates That Stack Emissions Are Not "Point Source Discharges"

As discussed above, EPA itself has stated definitively that atmospheric deposition is cognizable under the Clean Water Act only as nonpoint source pollution, which is not subject to NPDES permitting requirements. Not surprisingly then, FOLHY cannot point to a single instance in the nearly 30-year history of the Clean Water Act and Clean Air Act in which EPA or a delegated state NPDES permit program has asserted that stack emissions of air pollutants that may eventually deposit in a nearby surface water body require an NPDES permit. The EPA and delegated state permit programs have issued thousands upon thousands of NPDES permits, yet FOLHY cannot point to a single NPDES permit (and, indeed, we believe there is none) that attempts to regulate the emission of pollutants into the ambient air. EPA has promulgated over 50 effluent limitations guidelines under section 304 of the Clean Water Act, 33 U.S.C. §1314, that set forth the technology-based effluent limitations for the nation's most significant industrial point source discharges. FOLHY cannot point to a single effluent limitations guideline or EPA development document for those guidelines (and, again, we believe there is none) that even attempts to address the emission of pollutants into the ambient air which may be deposited to waters of the United States. EPA acted consistent with this separation of jurisdiction between the Clean Water Act and Clean Air Act in its recent "cluster rule" for the pulp, paper and paperboard industry. This cluster rule promulgated effluent limitations guidelines under the Clean Water Act and national emission standards for hazardous air pollutants under the Clean Air Act for this industry. EPA expressly recognized that its long-term goals for its regulation of this industry "include improved air quality, improved water quality, *the elimination of fish consumption advisories downstream of mills*, and the elimination of ecologically significant bioaccumulation." 63 Fed. Reg. 18504, 18507 (April 14, 1998) (emphasis added). EPA did not attempt to use the Clean Water Act to regulate air emissions from this industry, but instead correlated its MACT standards for emissions to air and its effluent limitations guidelines for discharges to water to help achieve these goals. *See, e.g.*, 63 Fed. Reg. at 18510 (chloroform from bleaching systems).

5. Relevant Case Law Rejects the Claim that NPDES Permits May be Required for Air Emission Sources

FOLHY attempts to overcome the overwhelming authority that air emission sources are not point sources based on the remedial goals of the Clean Water Act and caselaw broadly interpreting "point source" in very different contexts. Acme agrees that the Clean Water Act is a broad remedial statute; however, even such statutes have their limits. The Sixth Circuit has warned against simply "pointing to the 'remedial legislation' litany" as a reason to expand statutory jurisdiction in "nearly every conceivable scenario." *United States v. Cordova Chem. Co. of Mich.*, 113 F.3d 572, 577 (6th Cir. 1997), *vacated and remanded on other grounds sub nom. United States v. Bestfoods*, 524 U.S. 51 (1998) (CERCLA liability). *See also National Wildlife Fed'n v. Gorsuch*, 693 F.2d at 178 ("it is one thing for Congress to announce a grand goal, and quite another for it to mandate full implementation of that goal"). The Second Circuit similarly recognized that the questions posed by particular circumstances "cannot be resolved merely by simple reference to [the] admirable goal [of the Clean Water Act]." *United States v. Plaza Health Laboratories, Inc.*, 3 F.3d 643 (2nd Cir. 1993). Thus, that court held that an individual's disposal of vials of blood into a waterbody did not constitute a point source discharge. Jurisdiction under the Clean Water Act properly is limited here where it otherwise would create conflict with the Clean Air Act, another broad, remedial statute. Thus, the only reported case that directly addresses the applicability of the Clean Water Act to stack emissions of air pollutants, *Chemical Weapons Working Group, Inc. v. U.S. Department of the Army*, 111 F.3d 1485 (10th Cir. 1997), squarely rejects FOLHY's argument.

In *Chemical Weapons*, the plaintiffs argued, as does FOLHY in this case, that the Clean Water Act regulated the emission of limited amounts of pollutants into the atmosphere, even though that emission complied with an air permit issued by the state. Because the emissions in *Chemical Weapons* involved chemical warfare agents whose discharge into navigable waters is absolutely barred by section 301(f), 33 U.S.C. § 1311(f), the U.S. Court of Appeals for the Tenth Circuit held in part that the plaintiffs' interpretation would effectively shut down the incinerator operation, a result inconsistent with Congressional approval and funding of the incineration of such weapons. However, contrary to FOLHY's attempts to limit this decision, the court's grounds for its decision are not limited to circumstances unique to section 301(f). The court also rejected the application of the Clean Water Act to air emissions because it would lead to "irrational results," such as the regulation under the Clean Water Act "of any air emission that might possibly result in atmospheric deposition to navigable waters." 111 F.3d at 1490. The application of Clean Water Act discharge requirements to emissions from "cars and chimneys," among other sources, "under the Clean Water Act exposes the absurdity of [this] position." *Id.* The court also stated that "[t]ellingly, Plaintiffs also fail to cite a single instance in which stack emissions are regulated under the Clean Water Act." *Id.* Thus, the court concluded that "common sense dictates that [the defendant's] stack emissions constitute discharges into the air -- not water . . .." *Id.* Similarly, this Court should not abandon common sense, nor assume that Congress did so, but instead should reject FOLHY's strained attempt to apply a Clean Water Act permit program to emissions to the atmosphere in compliance with a Clean Air Act permit.

The *Chemical Weapons* court also rejected the plaintiffs' proposed construction of section 301(f) because it would create a regulatory conflict between the Clean Water Act and the Clean Air Act. The court declined "Plaintiffs' invitation to create such a conflict, especially since the pollution effects of atmospheric deposition are expressly considered and regulated under the Clean Air Act." *Id.* at 1491. This court also must reject the plaintiffs' Clean Water Act claim because it would drastically alter the pervasive regulatory scheme embodied in the Clean Air Act. To apply the Clean Water Act's regulatory scheme to Acme's air emissions would potentially expand the NPDES permit requirement to nearly every smoke stack and motor vehicle exhaust pipe in the country. To so vastly expand the scope of the Clean Water Act would cause lasting damage to Congress' carefully chosen regulatory scheme in the Clean Air Act, including its program for motor vehicle emission standards, by imposing duplicative and potentially inconsistent requirements on emissions sources. Both the Clean Air Act and the Clean Water Act would impose limitations at precisely the same point -- where the emissions exit the facility's stack. Dual permitting at the identical point under two different media-specific environmental statutes would be unprecedented and defies common sense. Absent a clear mandate in the Clean Water Act, it is unreasonable to assume that Congress intended such an unprecedented and impractical result. *Cf. Industrial Union Dept., AFL-CIO v. American Petroleum Institute*, 448 U.S. 607 (1980) (rejecting expansive interpretation of Occupational Safety and Health Act); *Union Elec. Co. v. EPA*, 427 U.S. 246, 263 (1976) (practical considerations lead Court to reject interpretation of Clean Air Act that would impose wasteful burdens upon EPA and the states).

The United States Supreme Court similarly has limited the application of the Clean Water Act to discharges of radioactive materials regulated under the Atomic Energy Act to avoid altering that statute's "pervasive regulatory scheme," even in the absence of express limiting language in the Clean Water Act. *Train v. Colorado Public Interest Research Group, Inc.*, 426 U.S. 1, 24 (1976). The Supreme Court indicated that it would need a clear expression of contrary legislative intent to recognize such a substantial change in policy. *Id.* No such expression of contrary legislative intent exists here. *Cf. Resource Investments, Inc. v. U.S. Army Corps of Engineers*, 151 F.3d 1162, 1169 (9th Cir. 1998) (rejecting Corps' claim that landfill located in wetlands required Section 404 Clean Water Act permit even though its siting was approved under RCRA, because it would create regulatory overlap with potentially inconsistent results).

Acme's permitted air emissions also are not subject to NPDES permit requirements because they lack the necessary nexus between a discharge source and a "water of the United States." *Chemical Weapons*, 111 F.3d at 1490 n.3. The courts have struggled to define the exact reach of the Clean Water Act's NPDES jurisdiction. In particular, case law is deeply split on whether a discharge of pollutants to groundwater that is hydrologically connected to a nearby surface water requires an NPDES permit. Far more courts than FOLHY suggests in its brief have held that NPDES jurisdiction does not extend to such situations. *See, e.g., Village of Oconomowoc Lake v. Dayton Hudson Corp.*, 24 F.3d 962 (7th Cir. 1994), *cert. denied* 115 S. Ct. 322; *Patterson Farm, Inc. v. City of Britton*, 22 F.Supp. 2d 1085, 1091 (D.S.D. 1998); *Allegheny Environmental Action Coalition v. Westinghouse Electric Corp.*, 1999 U.S. Dist. LEXIS 1838, *7 (W.D. Pa. Jan. 30, 1998); *Umatilla Waterquality Protective Ass'n, Inc. v. Smith Frozen Foods, Inc.*, 962 F. Supp. 1312 (D. Or. 1997) (concluding, after a particularly extensive review of the Clean Water Act's Legislative history, that the CWA does not regulate even groundwater hydrologically connected to a surface water); *Interfaith Community Organization v. AlliedSignal, Inc.*, 928 F.Supp. 1339, 1353 n. 18 (D.N.J. 1996); *Kelley v. United States*, 618 F. Supp. 1103 (W.D. Mich 1985); *United States v. GAF Corp.*, 389 F.Supp. 1379, 1383-84 (S.D. Tx. 1975). *See also Town of Norfolk v. U.S. Army Corps. of Engineers*, 968 F.2d 1438, 1451 (1st Cir. 1992) (deferring to Corps' determination that groundwaters connected to surface waters are not "waters of the United States"). However, the clear lesson of the case law is that NPDES jurisdiction does not extend beyond a discharge of a pollutant directly from its source to a receiving *water*, whether it be a surface water or possibly groundwater that is hydrologically connected to a nearby surface water. The Tenth Circuit in *Chemical Weapons* rejected that plaintiffs' attempt to use the groundwater analogy in supporting their argument that stack emissions require an NPDES permit. 111 F.3d at 1490 n.3 ("Without determining the precise jurisdictional limits of the Clean Water Act, we hold only that [the facility's] stack emissions, unlike other indirect discharges lack the requisite nexus to navigable waters to render them subject to regulation under that statute"). This court should reject FOLHY's similar attempt to rely on the groundwater analogy (and to rely selectively on only those groundwater cases which have reached its preferred result). An emission of mercury from Acme's stack into the *ambient air* does not constitute a discharge into "waters of the United States."

6. Emissions Stacks Are Not Point Sources

Moreover, Acme's stack emissions of mercury into the ambient air in compliance with its air permit do not constitute a point source addition of mercury to Lake Hypo. The Clean Water Act's definition of "point source," 33 U.S.C. § 1362(14), refers to a long list of conveyances such as pipes, ditches, channels, tunnels, conduits and wells, but pointedly does not include "stacks," a term reserved by Congress for the Clean Air Act. The Clean Water Act must be construed in light of the previously enacted Clean Air Act. *Cf. United States v. Shell Oil Co.*, 605 F. Supp. 1064, 1070 (D.Colo. 1985) (CERCLA must be construed in light of previously enacted RCRA. Accordingly, the Court should not apply the NPDES permit requirements of the Clean Water Act to stack emissions directly regulated under and expressly authorized by the Clean Air Act.

B. Assuming *Arguendo* That Acme's Stack Emissions Require an NPDES Permit, This Court Lacks Jurisdiction To Permanently Enjoin Acme's Operations For The Failure To Obtain A NPDES Permit

Under the CWA citizen suit provision, the court has jurisdiction to enforce an effluent standard or limitation it finds a defendant is violating. 33 U.S.C. § 1365(a). In this case, the "effluent standard or limitation" FOLHY accuses Acme of violating is discharging a pollutant without a permit, which would be a violation of section 301(a). Therefore, this court could require Acme to apply for and obtain a permit before continuing its operations.

FOLHY, however, requests a permanent injunction because it believes Acme will be unable to obtain the allegedly necessary permit. This court lacks jurisdiction to permanently enjoin Acme's operations for Acme's purported failure to obtain an NPDES permit. Moreover, as discussed below, Acme is entitled to have an opportunity to obtain an NPDES permit, if one were to be required for its air emissions.

C. Assuming *Arguendo* That Acme's Stack Emissions Require An NPDES Permit, The CWA Citizen Suit Provision Cannot Be Used To Enforce Water Quality Standards

FOLHY contends that Acme's emissions violate the GLI's antidegradation policy and the Clean Water Act's TMDL requirements. FOLHY is arguing that water quality standards are equivalent to "effluent standards or limitations" and that the court can enforce them under section 505(a). The CWA citizen suit provision provides FOLHY no cause of action to enforce water quality standards not incorporated into a permit –it applies only to permit violations and not to violations of water quality standards. *Atlantic States Legal Foundation, Inc. v. Eastman Kodak Co.*, 12 F.3d 353, 357 (2nd Cir. 1993) ("ASLF"), *cert. denied*, 513 U.S. 811 (1994) (only permit conditions enforceable under a CWA citizen suit); *Oregon Natural Resources Council v. U.S. Forest Service,* 834 F.2d 842, 850 (9th Cir. 1987) ("*ONRC*") ("it is not the water quality standards themselves that are enforceable in section 1311(b)(1)(C), but it is the "limitations necessary to meet" those standards, or "required to implement the standards."). As the United States Supreme Court recognized, it is the NPDES permit that translates water quality standards into enforceable obligations of the discharger. *EPA v. California ex rel State Water Resources Control Bd.*, 426 U.S. 200, 205 (1976).[1]

FOLHY may attempt to rely upon *Northwest Environmental Advocates v. City of Portland,* 56 F.3d 979 (9th Cir. 1995) ("*NWEA*"), *cert. denied*, 518 U.S. 1918 (1996), to argue that water quality standards are enforceable by citizens. In *NWEA*, a citizen brought an action under section 505 alleging that the City of Portland was regularly violating a permit condition prohibiting any discharges that would violate state water quality standards. The court held that the "plain language of CWA § 505 authorizes citizens to enforce all permit conditions." *Id.* at 986 (quoting 33 U.S.C. §§ 1365(a)(1)(A) (may commence action violations "of effluent standard or limitation"), (f)(2) ("effluent standard or limitation" includes a section 301 or 302 effluent standard or other limitation), (f)(6) ("effluent standard or limitation" includes section 402 permit or condition). Significantly, the City's NPDES permit contained a condition prohibiting any discharge that would violate water quality standards. Because of the existence of the permit condition, the court held that NWEA had standing under section 505(a) and (f)(6) to enforce the water quality standards condition in the City's permit. *Id.* at 990. The court acknowledged that in the absence of an express permit condition prohibiting discharges that violate water quality standards, there is no jurisdiction under section 505 to enforce bare water quality standards. *Id.* at 989 n. 11 (citing cases that hold that water quality standards are enforceable under section 505 only if incorporated into an NPDES permit.)

In this case, there is no permit and thus no permit conditions to enforce pursuant to section 505(f). Therefore, the rationale of *ASLF* and *ONRC* –holding that water quality standards and other regulations outside the scope of a permit are unenforceable –is controlling. FOLHY cannot enforce bare water quality standards against Acme within the context of a CWA citizen suit, but can only require that Acme obtain a permit.

D. This Court Lacks Jurisdiction Over FOLHY's Claim That Acme Would Be Denied An NPDES Permit

FOLHY asks this court to rule that Acme would be unable, under any circumstance, to obtain an NPDES permit. FOLHY brings its CWA claim against Acme under Section 505, 33 U.S.C. § 1365. It has not brought a claim against the State of Michigan, which would be responsible for issuing a permit. Neither has it pled nor could it plead a jurisdictional basis for its request for a declaratory judgment that no NPDES permit could be issued to Acme. Thus, FOLHY's claim that Acme cannot obtain an NPDES permit must be dismissed for lack of subject matter jurisdiction.

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[1] Acme is not asserting, as FOLHY contends, that a company without a CWA permit is free to pollute because it has no legal obligations. Acme denies that it needs a CWA permit. If Acme is wrong and the court holds that Acme must get a permit, Acme agrees that it can be forced to do so by FOLHY's citizen suit. In the absence of a permit, FOLHY cannot enforce water quality standards. It can only require that Acme obtain a permit. Only through a permit do water quality standards become enforceable obligations of a point source discharger.

E. FOLHY's Argument That Acme Would Be Denied An NPDES Permit Is Both Incorrect and Premature

1. Acme's Emissions, Which Are Authorized by MDEQ, Would Not Vio late Antidegradation Rules Because They Would Not Constitute a Lowering of the Water Quality of Lake Hypo.

If this court should determine that Acme needs an NPDES permit to operate, Acme must be given the opportunity to apply for and make the requisite antidegradation demonstration. The GLI requires Michigan and other Great Lakes states to "identif[y] minimum water quality standards, antidegradation policies, and implementation procedures for the Great Lakes System to protect human health, aquatic life, and wildlife." 40 C.F.R. §§ 132.1-132.6. States must adopt provisions consistent with this guidance. *American Iron and Steel Institute v. EPA*, 115 F.3d 979, 987 (D.C. Cir. 1997) (guidance provides minimum standards states must meet). EPA notes that the GLI itself is unenforceable. *Id.* It will become enforceable only if it is adopted by a state or imposed by the agency on a state that fails to submit an acceptable plan. *Id.*

The State of Michigan has issued regulations consistent with the GLI which can be found in Part 4 (Water Quality Standards) and Part 8 (Water Quality-Based Effluent Limit Development For Toxic Substances) of the Administrative Rules. MAC R. 323.1041-.1117 and R. 323.1201-.1221, respectively. These rules do not on their face require the denial of an NPDES permit to a source such as Acme.

Rule 1215 (R. 323.1215) provides that an NPDES permit may authorize the discharge of bioaccumulative chemicals of concern ("BCCs"), such as mercury, that lower the water quality of the receiving water body if the permittee makes a successful antidegradation demonstration pursuant to Rule 1098 (R. 323.1098). Rule 1098 provides that there shall be no lowering of water quality with respect to a pollutant that is causing nonattainment of a designated use in a waterbody. R. 323.1098(2). In this case, fish advisories have been issued due to the presence of mercury which have lead MDEQ to list Lake Hypo as an impaired water body. FOLHY, in assuming that Acme's mercury emissions would lower the water quality with respect to mercury, assumes away many highly complex legal and technical issues relating to the air deposition of mercury emissions to Lake Hypo. Acme is entitled to the opportunity to establish that its emissions would not lower the water quality of Lake Hypo.

Because Acme's air emissions are authorized by MDEQ's air permit, after a permitting process that evaluated potential air deposition to Lake Hypo as part of a multipathway risk assessment, the predicted air depositions do not constitute a "lowering of water quality" under the Part 4 rules. Rule 98(6) (R. 323.1098(6)) excludes several enumerated circumstances from constituting a lowering of water quality, including "[i]ncreased BCC loadings within the authorized levels of a limit in an existing control document . . .." MAC R. 323.1098(6)(j). A "control document" is defined as "any authorization issued by [MDEQ] to any source of pollutants to surface waters of the state that specifies conditions under which the source is allowed to operate." MAC R. 323.1043(t). Because the air emission permit issued by MDEQ to Acme qualifies as such a control document, the increased mercury loadings predicted by the modeling conducted in the permit proceeding do not constitute a lowering of the water quality of Lake Hypo. Thus, MDEQ's antidegradation provisions, which were approved by EPA, do not preclude the issuance of an NPDES permit to Acme.

2. Reliance Upon Unvalidated Modeling That Predicts a Small Percentage Increase in Mercury in Lake Hypo Would be Arbitrary and Capricious

Moreover, use of the modeling in this instance to preclude or condition Acme's operations would be arbitrary and capricious. Although FOLHY attempts to present the modeled predictions of an increase in fish mercury levels of less than 0.6 - 3% as established facts, they are not. The modeling used in this instance not only makes overly conservative simplifying assumptions, but has not been validated by real world data. In fact, real world data from a recent study by Clyde Sweet and Eric Prestbo presented *little more than a month ago to the* Mercury in the Environment Specialty Conference in Minneapolis, entitled "Wet Deposition of Mercury in the U.S. and Canada," show that actual levels of mercury in rainfall in the industrial portions of North America differ dramatically from the levels predicted by EPA models. Similarly, a recent study conducted in the Whitefish Bay of Lake Superior by Dr. James Hurley contradicts the assumptions about methylation of mercury in the water column used to model Acme's potential effects on fish in Lake Hypo. The Sixth Circuit found arbitrary and capricious EPA's use of a model without validation to predict sulfur dioxide air emissions diffusion at two power plants adjacent to Lake Erie. *Ohio v. EPA,* 798 F.2d 880 (6th Cir. 1986). The court had concluded in an earlier opinion (*Ohio v. EPA,* 784 F.2d 224 (6th Cir. 1986)) that EPA had not evaluated, validated or empirically tested the model at the sites in circumstances where the parties agreed that site-specific lakeshore effects in the dispersion of sulfur dioxide were significant but untested and unknown. The Sixth Circuit found arbitrary and capricious EPA's use of a model which was subject to four validation studies but with "unimpressive" showings. 784 F.2d at 230. Similarly, the District of Columbia Circuit held that EPA's use of a generic air dispersion model to designate methylene diphenyl diisocyante as a high risk pollutant was arbitrary and capricious. *Chemical Mfrs. Ass'n v. EPA,* 28 F.3d 1259, 1261 (D.C. Cir. 1994). "Judicial deference to the agency's modeling cannot be utterly boundless: we must reverse the agency's application of the generic air dispersion model as arbitrary and capricious if there is simply no rational relationship between the model and the known behavior of the hazardous air pollutant to which it is applied." *Id.* at 1265. An agency's failure to continually develop, review and apply updated scientific information may render its use of modeling arbitrary and capricious. *Texas v. EPA,* 499 F.2d 289, 301 n. 16 (5th Cir. 1974), *cert. denied,* 427 U.S. 905 (1976). Here, the modeling has not been validated, fails to incorporate the latest scientific information and, indeed, is contrary to real world data, especially with respect to mercury methylation in the water column. This modeling cannot support regulatory decisions to preclude or substantially condition an NPDES permit, if one were to be required for Acme's air emissions.

3. Even if Subject to NPDES Permit Requirements, Acme Could Qualify for a Permit Under the TMDL Process

Furthermore, FOLHY's claim that Acme cannot obtain an NPDES permit totally ignores the fact that the TMDL process involves an allocation of loadings among present and future point and nonpoint sources to the water body. For example, MDEQ's antidegradation rule excludes as a "lowering of water quality" any "discharges at a site where there is a simultaneous enforceable decrease in the allowed loading of the pollutant . . . from sources contributing to the receiving water body, such that there is no net increase . . .." MAC R. 323.1098(6)(k). Thus, it is clear that even if an NPDES permit is required for Acme's air emissions, it may qualify for such a permit. FOLHY's attempt to deny Acme the opportunity to seek such a permit should be rejected.

4. The Issue of Whether Acme Would be Issued an NPDES Permit Is Not Ripe for Review

In other words, the issue of whether Acme can qualify for an NPDES permit is not ripe for review in this proceeding. As the U.S. Supreme Court has explained, the doctrine of ripeness seeks "to prevent the courts, through avoidance of premature adjudication, from entangling themselves in abstract disagreements over administrative policies, and also to protect the agencies from judicial interference until an administrative decision has been formalized and its effects felt in a concrete way by the challenging parties." *Abbott Laboratories v. Gardner,* 387 U.S. 136, 148-9 (1967). *Abbot Laboratories* accordingly established a two-part test to evaluate ripeness: "the fitness of the issues for judicial decisions and the hardship to the parties of withholding court consideration." *Id.*

Even "purely" legal issues are not necessarily ripe for review. For example, in *Diamond Shamrock Corp v. Costle,* 580 F.2d 670 (D.C. Cir. 1978), the court held that challenges to EPA's regulations under the Clean Water Act that generally refuse to grant a discharger credit for pollutants in its intake water was not ripe for review. The court emphasized the fact that the parties challenging the regulations failed to point to any present impact or hardship on them. *Id.* at 673-74. "[I]n the absence of hardship only a minimum showing of countervailing judicial or administrative interest is needed, if any, to tip the balance against review." *Id.* at 674 (citations omitted). *Cf. Natural Resources Defense Council, Inc. v. EPA,* 859 F.2d 156, 190 (D.C. Cir. 1988) ("A Petitioner cannot show hardship by positing a speculative or hypothetical future harm."). The *Diamond Shamrock* Court also found that judicial interests would be furthered by withholding review. "Judicial review is generally facilitated by waiting until administrative policy is implemented for then a court can be freed, at least in part, from theorizing about how a rule will be applied and what its effect will be." 580 F.2d at 674. The D.C. Circuit again rejected as unripe a challenge to the same EPA regulations in the *Natural Resource Defense Council* case. The court noted that "the broad legal issue may have links to the concededly fact-dependant ones that we cannot now fully perceive," and, therefore, concluded that not only the fact-dependent claims, but also the more purely legal one, were unripe. 859 F.2d at 205.

FOLHY's claims that Acme cannot be issued an NPDES permit ignore factual and legal issues that properly should be developed in the NPDES process. FOLHY will have ample opportunity to assert its position in that process and will suffer no hardship by this court's refusal to review them here. Failure to dismiss FOLHY's claim that Acme cannot be issued an NPDES permit not only would deprive Acme the opportunity to show that it qualifies for such a permit, should one be declared necessary, but would deprive MDEQ the opportunity to further develop the facts and make appropriate policy judgments relevant to the issue. Accordingly, the ripeness doctrine provides yet another basis for this court to dismiss FOLHY's claim.

FOLHY's attempts to preempt the permitting process and deprive Acme of an opportunity to demonstrate compliance with the State of Michigan's antidegradation policy and TMDL program should be rejected.

F. If Acme's Stack Emissions Do Not Require An NPDES Permit, FOLHY Has No Cause Of Action Under The CWA Citizen Suit Provision

FOLHY makes the alternative argument that if Acme's emission stack is not a point source, it nonetheless violates the GLI's antidegradation policy. FOLHY argues that the GLI antidegradation policy is applicable to a nonpoint source "where independent regulatory authority exists requiring compliance with water quality standards." GLI antidegradation policy, § I.

This court lacks jurisdiction over this claim. "[P]laintiffs cannot enforce state water quality standards with respect to nonpoint sources pursuant to [the citizen suit provision] because Congress did not so provide." *ONRC* at 851. FOLHY claims that Acme is violating section 301(a) because it is discharging a pollutant without a NPDES permit. Section 301(a) provides that "the discharge of any pollutant" shall be unlawful unless, among other things, the source obtains a section 402 permit. Section 402 provides that "discharges of pollutants" must be permitted pursuant to this section or sections 318 and 404. "Discharge of a pollutant" is defined as "any addition of any pollutant to navigable waters *from any point source* . . . ." 33 U.S.C. § 1362(12). FOLHY cannot dispute that the basis for its citizen suit –failure to obtain a NPDES permit –is premised upon the existence of a discharge of pollutants by a point source. In the absence of a point source discharge, its Clean Water Act suit cannot be maintained.

II. FOLHY'S RCRA CLAIM FAILS BOTH FOR LACK OF JURISDICTION AND FOR FAILURE TO DEMONSTRATE THAT ACME'S EMISSIONS PRESENT AN IMMINENT AND SUBSTANTIAL ENDANGERMENT

In its last challenge, FOLHY asserts a cause of action under section 6972(a)(1)(B), which provides in relevant part as follows:

> any person may commence a civil action on his own behalf –
>
> (1)(B) against any person ... including any past or present generator, past of present transporter, or past or present owner or operator of a treatment, storage, or disposal facility, who has contributed or who is contributing to the past or present handling, storage, treatment, transportation, or disposal of any *solid or hazardous waste* which may present an *imminent and substantial endangerment* to health or the environment[.]

42 U.S.C. § 6972(a)(1)(B) (emphasis added). FOLHY alleges that Acme's permitted air emissions will create an imminent and substantial endangerment to health or the environment and on that basis urges the court to enjoin the operation of Acme's facility. FOLHY's allegations are wrong as a matter of law and fact.

A. Uncontained Gaseous Emissions are Not "Solid Waste" Within the Meaning of RCRA Section 1004(27) and in Accordance With EPA's Authoritative Interpretation and, Therefore, are Not "Hazardous Waste"

As the uncontested facts in this case show, Acme's stack will emit only gaseous mercury (50% mercury chloride and 50% elemental mercury) and no particulate mercury. Accordingly, Acme's mercury emissions constitute neither solid waste, nor hazardous waste as required for a citizen suit under RCRA. FOLHY's RCRA citizen suit must be dismissed for lack of subject matter jurisdiction.

RCRA defines "solid waste" as:

> any garbage, refuse, sludge from a waste treatment plant, water supply treatment plant, or air pollution control facility and other discarded material including solid, liquid, semisolid or *contained gaseous* material resulting from industrial, commercial, mining and agricultural operations . . .

42 U.S.C. 6903(27) (emphasis added).

Once again, FOLHY's claims are contradicted by the applicable statute and its interpretation by EPA. As the italicized language demonstrates, RCRA excludes uncontained gaseous material, such as Acme's atmospheric emissions, from the definition of solid waste. EPA, which has "chief responsibility for the implementation and enforcement of RCRA," *Meghrig v. KFC Western, Inc.*, 516 U.S. 479, 486 (1996), has consistently interpreted the underscored language to exclude uncontained gaseous emissions from the definition of "solid waste." In its final rule concerning the identification and listing of hazardous waste, EPA acknowledged that its "authority to identify or list a waste as hazardous under RCRA is limited to containerized or condensed gases (i.e. section 1004(27) of RCRA excludes all other gases from the definition of solid wastes and thus cannot be considered hazardous waste." 54 Fed. Reg. 50968, 50973 (Dec. 11, 1989).

This interpretation is consistent with previously issued guidance on fume incinerators, which are used to destroy gaseous emissions from various industrial processes. 47 Fed. Reg. 27520 (June 24, 1982). In the preamble to this rule, EPA concluded that RCRA is inapplicable to fume incinerators because the input – uncontained gas – is not a RCRA solid waste. *Id.* at 27530. *See also* EPA OSWER Directive 9488.1986(03) (1986) (citing fume incinerator guidance in determining that fume incinerators are not subject to RCRA because the incinerator's input is an uncontained gas and, therefore, not a solid waste).

Again, in 1986, EPA relied on its interpretation of "solid waste" to determine that carbon canisters saturated with spent solvents are not covered by RCRA because the solvent is in the form of an uncontained vapor. EPA OSWER Directive 9441.1986(54). Even though the solvents, when in liquid form, are listed hazardous wastes, they are not "solid waste" when in vapor form because they are *uncontained* gaseous material. *Id. See also In the Matter of: BP Chemicals America, Inc., Lima, Ohio*, 1991 WL 208971, *1-2 (EPA RCRA Appeal No. 89-4, Aug. 20, 1991) (rejecting EPA Region V's argument that hydrogen cyanide vapors were containerized (and, thus, constitute "solid waste") by the "various process units through which it passes by associated piping and by the plant as a whole"); *In Re: Chemical Waste Management of Indiana, Inc.*, 1995 WL 523542, *11 (EPA RCRA Appeal No. 95-4, Aug. 23, 1995) ("Thus, a substance in gaseous form is not considered a solid waste under RCRA unless it is containerized.").

Thus, EPA has long and consistently interpreted "solid waste" as excluding *uncontained* gaseous materials from RCRA's ambit. As discussed at length above, the *Chevron* doctrine requires a reviewing court to defer to EPA's reasonable interpretation of the statute it administers.

FOLHY contends that Acme's mercury emissions are "solid waste." The cases it cites to support this proposition deal with discarded materials that were *solid* as opposed to *gaseous* material. *See Orchard Lane Road Assoc. v. Pete Lien & Sons, Inc.*, 34 ERC 1749 (D.Co. Jan. 8, 1992) (small particulate silica dust emission); *Conn. Coastal Fishermen's Ass'n. v. Remington Arms Co.*, 989 F.2d 1305 (2nd Cir. 1993) (lead shot and clay target pieces). They provide no support for FOLHY's contention that uncontained gaseous emissions are a RCRA "solid waste." Acme's emissions are, in fact, gaseous and do not consist of particulate mercury. After implementing MACT requirements, the resulting emission is in the ratio of 50:50 elemental mercury to mercury chloride. No particulate mercury is emitted from Acme's stacks.

Under RCRA, hazardous wastes are a subset of solid wastes; a substance first must be classified as a solid waste to be eligible for classification as a hazardous waste. 42 U.S.C. § 6903(5) (RCRA definition of "hazardous waste" as a "solid waste or combination of solid wastes" meeting specified criteria). *See also* 40 C.F.R. § 261.3 (EPA definition of "hazardous waste" as a "solid waste" satisfying specified criteria); EPA OSWER Directive 9441.1990(01) at 1 ("In order for materials to be hazardous wastes under the RCRA program, and therefore subject to RCRA regulation, they must first be classified as solid wastes."). Because Acme's mercury emissions are excluded from the statutory definition of solid waste, they cannot be considered hazardous waste either. Because Acme is emitting neither solid nor hazardous waste, FOLHY has failed to satisfy a jurisdictional prerequisite for its RCRA citizen suit. Therefore, FOLHY's RCRA claim must be dismissed as a matter of law.

B. Acme Is Not "Disposing" of Mercury Emissions Within the Meaning of RCRA

Even assuming *arguendo* that uncontained gaseous emissions constitute solid waste, FOLHY's RCRA claim also fails because Acme is not disposing of mercury emissions within the meaning of RCRA.

RCRA section 1004(3) defines "disposal" as:

> the discharge, deposit, injection, dumping, spilling, leaking or placing of any solid waste or hazardous waste *into or on any land or water* so that such solid waste or hazardous waste or any constituent thereof may enter the environment or be emitted into the air or discharged into any waters, including ground waters.

42 U.S.C. § 6903(3) (emphasis added).

As the italicized language provides, disposal covers only placement of solid or hazardous waste onto the land or into the water; it does not include disposal to the ambient air. It is notable that Congress did not include *emitting* solid or hazardous waste within the RCRA definition of disposal. In contrast, Congress included "emitting" as part of its definition of what constitutes a "release" of hazardous substances under CERCLA. 42 U.S.C § 9601(22) ("'release' means any spilling, leaking, pumping, pouring, *emitting*, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment. . . .") (emphasis added). As discussed above, when Congress intended to address emissions into the atmosphere, as it did under the Clean Air Act, it did so by using the word "emission" as opposed to "discharges" to water addressed under the Clean Water Act.

When Acme's mercury emissions exit the stack, they are emitted to the air and not "into or on any land or water." For this reason, they are excluded under the section 1004(3) definition of disposal. Acme, therefore, is not "contributing to . . . the disposal of any solid or hazardous waste . . .." 42 U.S.C. § 6972(a)(1)(B). Thus, this court lacks jurisdiction over Acme for purposes of FOLHY's RCRA claim.

C. FOLHY Cannot Employ RCRA's Citizen Suit Provision to Collaterally Attack the State of Michigan's Decision to Permit the Operation of Acme's Facility

As noted above, MDEQ has issued all necessary air permits that authorize Acme to operate its facility. MDEQ regulates emissions of air pollutants under Part 55 of the NREPA, M.C.L. §§ 324.5501-.5542. Air permits issued by MDEQ contain conditions that assure compliance with Part 55, its rules and the federal Clean Air Act. NREPA section 5505, M.C.L. § 324.5505. Emission rates for mercury are determined pursuant to Rules 224-226, MAC R 336.1224-1226.

On a case-by-case basis, MDEQ may determine that the emission rates calculated by Rules 224-226 do not provide adequate protection of human health or the environment. Rule 228 authorizes MDEQ to set a more stringent emission rate based upon consideration of "all relevant scientific information, such as exposure from routes of exposure other than direct inhalation, synergistic or additive effects from other toxic air contaminants, and effects on the environment." MAC R 336.1228. MDEQ conducted such a multipathway risk assessment in this case prior to setting the emission limitations in Acme's permit.

Furthermore, MDEQ may deny a permit if it finds that "[i]nstallation, construction, reconstruction, relocation, alteration, or operation of the source presents an imminent and substantial endangerment to human health, safety or welfare or the environment." NREPA section 5510(b), M.C.L. § 324.5510(b).

Thus, MDEQ had authority to require emissions limitations sufficiently stringent to protect human health and environment, and to deny an air emissions permit to a source whose operation presents an imminent and substantial endangerment to human health or the environment, M.C.L.§ 324.5510(b). Based on MDEQ's multipathway risk assessment in this case that took into account, not only relevant air emission standards, but also indirect exposure routes and effects on the environment, MDEQ determined in the permit proceeding that Acme's mercury emissions do not present an imminent and substantial endangerment to human health or the environment.

By arguing that Acme's emissions do present an imminent and substantial threat to human health or the environment, FOLHY is launching a collateral attack upon MDEQ's permitting process. *See Coalition for Health Concern v. LWD, Inc.*, 60 F.3d 1188, 1192 (6th Cir. 1995) ("allegations [of imminent and substantial endangerment] can[not] reasonably be interpreted as anything other than a collateral attack on Kentucky's hazardous waste permitting process in an effort to enjoin issuance to LWD of an operating permit"); *Greenpeace, Inc. v. Waste Technologies Industries*, 9 F.3d 1174, 1182 (6th Cir. 1993) (dismissing RCRA citizen suit as impermissible collateral attack on permitting process).

FOLHY attempts to distinguish *Coalition for Health Concern* and *Greenpeace* on the grounds that the facilities in those cases had obtained RCRA permits whereas Acme has obtained a state air permit. Those cases relied in part upon RCRA section 7002(b)(2)(D), which provides:

> *No action may be commenced under subsection (a)(1)(B) of this section by any person (other than a State or local government) with respect to the siting of a hazardous waste*

> treatment, storage, or disposal facility, nor to restrain or enjoin the issuance of a permit for such facility.

42 U.S.C. 6972(b)(2)(D).

Moreover, the Sixth Circuit reasoned in *Greenpeace* that to allow collateral attacks on the permitting process would eviscerate the limited permit appeal process authorized by RCRA section 7006. 9 F.3d at 1181. It concluded that the only means available to challenge a RCRA permit was through section 7006 and that compliance with a RCRA permit precludes Section 7002(a)(1)(B) jurisdiction. Id. at 1181-82. Even if section 7002(b)(2)(D) applies only to RCRA permits, the court's reasoning in *Greenpeace* applies with equal force to the instant case.

As in *Greenpeace,* where EPA had specifically permitted the conduct at issue, FOLHY's arguments here should have been made in the state permitting process. That requirement is especially compelling in this case, where the State conducted a multipathway risk assessment that took into account pathways of indirect exposure. FOLHY's arguments either were already considered and rejected in the State's air permit proceedings or FOLHY failed to raise them. Where the risks complained of in the Section 7002(a)(1)(B) suit *have* been addressed by an issued permit, a collateral attack under section 7002(a)(1)(B) should be rejected. *Greenpeace,* 9 F3d at 1180 ("Citizens may not bring Section 6972(a)(1)(B) suits to challenge permitted activity"). *See also Babich,* "RCRA Imminent Hazard Authority: A Powerful Tool for Businesses, Governments, and Citizen Enforcers," 24 ELR 10122 (March 1994) at p. 8 (if courts wish to apply "permit shield" to RCRA imminent hazard actions, the issue should be whether the permit addresses the risks complained of under section 7002(a)(1)(B)).

D. FOLHY'S RCRA Claim Must Be Dismissed Because it Has Failed to Demonstrate That Acme's Operations Present an "Imminent and Substantial Endangerment to Health or the Environment"

A claimant under RCRA section 7002(a)(1)(B), 42 U.S.C. 6972(a)(1)(B), must establish:

> (1) conditions that may present an imminent and substantial endangerment to health or the environment;
>
> (2) that the endangerment stems from a RCRA solid or hazardous waste; and
>
> (3) that defendant has contributed to or is contributing to the handling, storage, treatment or disposal of such waste which may present an imminent and substantial endangerment.

Foster v. United States, 922 F. Supp 642, 661 (D.D.C. 1996) (citation omitted).

Section 7002(a)(1)(B) requires more than a showing that a RCRA solid or hazardous waste is present. *Id.* To qualify as "imminent," an endangerment must "threaten to occur immediately." *Meghrig,* 516 U.S. at 485. An endangerment is "substantial" if it can be described as so "serious" that "there must be some necessity" for action. *Price v. U.S. Navy,* 39 F.3d 1011, 1019 (9th Cir. 1994); *Foster,* 922 F. Supp. at 661.

Extremely conservative modeling has predicted that Acme's operations will add 9 kilograms of mercury to Lake Hypo annually or less than 3% of the total annual loading. The model further predicts that this loading will increase mercury levels in fish by 0.6% to 3%. Not only are these predicted increases minute, but they are overly conservative, as the model acknowledges. Thus, even the model's conservative prediction more accurately is stated as less than 0.6% to less than 3%. As discussed above, the modeling fails to incorporate the latest scientific information and is not validated by real world data.

Even based on the overly conservative predictions of the modeling conducted here, Acme's emissions do not amount to an imminent and substantial endangerment. The small increment predicted to come from Acme's emissions cannot be characterized as a substantial endangerment. The potential harm from mercury contributed from all sources, natural and anthropogenic, is chronic, not acute. MDEQ and other regulatory authorities have mitigated that potential risk through the issuance of fish advisories. Indeed, given the variability of mercury concentrations among individual fish of the same species and from season to season, such a small percentage increase (if it actually occurs) could not even be reliably measured. Moreover, FOLHY has not alleged that the increase would change the status quo. Fish advisories would remain in place; no outright ban on consumption would be imposed. In light of the fact that advisories are already in place, Acme's additions prompt no "necessity for action." *Price*, 39 F.3d at 1019.

The potential threat of harm that exists in Lake Hypo and its fish due to the presence of mercury is attributable not to Acme but to background and other sources of mercury. Even if the court were to shut Acme down at substantial cost to the area economy, it would not eliminate the potential risk that necessitates the need for the fish advisories.

Furthermore, in conducting the multipathway risk assessment, the State of Michigan has previously determined that the modeled increase in mercury to Lake Hypo and its potential uptake in fish poses no actionable threat of harm. Indeed, in issuing the air permit, the State concluded that Acme's emissions are at acceptable levels. *See Price*, 818 F. Supp. at 1325 (if level of contaminants are below levels acceptable by State, no imminent and substantial endangerment exists).

Thus, even if the model has correctly predicted the increase in mercury due to Acme's operations, such an increase is not "substantial." Accordingly, the court should dismiss FOLHY's RCRA claim.

CONCLUSION

For the reasons set forth above, the court should enter a judgment for Acme on its cross-motion for *summary judgment and dismiss FOLHY's claims.*

Respectfully submitted,

Peter D. Holmes

Karen H. Schodowski

Attorneys for Defendant Acme Widget

Dated: October 13, 1999

APPENDIX F

APPEAL

TO THE ONTARIO ENVIRONMENTAL APPEAL BOARD

BY THE APPLICANT ACME WIDGET LIMITED

SUBMISSIONS ON BEHALF OF ACME WIDGET LIMITED

John L. Martin

INTRODUCTION

1. This appeal is pursuant to Paragraph 139(2)(b) of the *Environmental Protection Act*, Revised Statutes of Ontario, 1990, Chapter E.19, as amended (the EPA), with respect to the imposition of a condition of approval on Certificate of Approval (Air) No. 8-1234-99-666, issued to Acme Widget Limited (the "Applicant"), dated August 18, 1999, pursuant to Section 9 of the EPA, by Mr. B. Wind, a Director for the purposes of Section 9.

2. Paragraph 139(2)(b) states:

> *"139(2) When the Director,*
>
> ...
>
> (b) *imposes terms and conditions in issuing a ... certificate of approval ...;*
>
> ...
>
> *the Director shall serve notice together with written reasons therefor upon the applicant ... and the applicant ... may, by written notice served upon the Director and the Board within fifteen days after the service of the notice, require a hearing by the Board."*

3. Notice of Appeal on behalf of the Applicant was served on the Director and the Board on August 27, 1999.

4. The condition under appeal states:

> "The operator shall ensure that the mercury emission rate does not exceed 11 grams per hour."

5. The reason for the imposition of the condition stated by the Director is:

> "Mercury is a persistent toxic substance that bioaccumulates. The facility is located near Lake Hypo. Mercury will be deposited in the lake from the facility's air emissions. Best available technology can control the emission rate to less than 11 g/hr. It is appropriate to limit the emission rate to protect life in the lake and the health of humans who may consume fish from the lake."

6. A hearing into this matter was held October 12 -14, 1999, before the Environmental Appeal Board (the "Board"). At that time, the Board invited written submissions to be presented to the Board along with oral submissions on October 27, 1999.

7. The facts from the hearing of evidence that are relied on by the Applicant are set out in the following paragraphs followed by a summary of the applicable law and argument.

THE FACTS

Background

8. The Applicant is a privately held corporation, incorporated pursuant to the laws of Ontario. Its head office is located in Windsor, Ontario.

9. The Applicant intends to construct a manufacturing facility in the Town of Needyville, Ontario, a town of 5,000 persons, near the southeast corner of Lake Hypo on the Hypo River.

10. The facility, once completed, will employ 300 persons on a full time basis. The plant will manufacture widgets used by the medical community in corrective heart procedures on both children and adults. It will be the only plant in Canada and will guarantee the availability of widgets to the Canadian medical community. At the present time importation of the devices is irregular.

11. Needyville was chosen as the site for the facility because of the incentives offered by the federal and provincial governments to have manufacturing facilities locate in this area of chronic unemployment.

12. The plant is designed to be a state-of-the-art facility. The only hazardous material that is associated with the manufacturing process is mercury. While all efforts are made to capture any mercury not permanently fixed in the product, some mercury is present in the air emissions from the process.

Air Emissions From Applicant's Facility

13. As noted by the experienced and professional consulting engineers called on behalf of the Applicant, the air pollution control (APC) technology proposed is the best available control technology economically achievable. It reduces mercury emissions from the facility by approximately 90%, reducing the emission rate from approximately 212 grams per hour to 21.2 grams per hour. The mercury removed by the APC equipment is captured and reused in the manufacturing process.

14. Air emissions from the facility would be released to the environment through a 90 metre (295 foot) stack at the operating characteristics that are set out in the technical brief that was provided to the Board members at the hearing.

15. Based on this information, an application for a Certificate of Approval (Air) (commonly called an "air approval") was made to the Environmental Assessment and Approvals Branch (the "Approvals Branch") of the Ontario Ministry of the Environment (the "MOE") on February 15, 1999. This application was made pursuant to Section 9 of the EPA.

16. As part of that application, the Applicant considered the requirements of Regulation 346, Revised Regulations of Ontario 1990, as amended ("Regulation 346"). Using the air dispersion model that is incorporated into that regulation, the Applicant calculated the half-hour maximum point-of-impingement (MPOI) concentration that was predicted from the operation of the facility. That maximum concentration was determined to be 10 nanograms per cubic metre (ng/m^3) or 0.01 micrograms per cubic metre (ug/m^3). The legally binding air quality standard for mercury that is contained in Regulation 346 for the half-hour MPOI is 5.0 ug/m^3.

17. The Applicant also considered the U.S. Environmental Protection Agency developed Industrial Source Complex Screen3 model. This model was known to be used by the Approvals Branch when considering applications. This model predicted a maximum one-hour average concentration of 17 ng/m^3, or 0.017 ug/m^3.

18. The MOE has no legal standard with respect to a one-hour MPOI concentration for mercury. Based on the document entitled, "Summary of Point of Impingement Standards, Ambient Air Quality Criteria (AAQC's), and Approvals Screening Levels (ASLS)", prepared by the Standards Development Branch of the MOE, Revised August 1998, there is no AAQC or ASLS for mercury other than a 24 hour AAQC of 2 ug/m^3. It is noted that even if the one -hour MPOI predicted by the SCREEN3 model occurred for twenty-four consecutive hours, the concentration would be below 2 ug/m^3.

19. It was noted in the evidence that the MOE has no stack emission concentration (as opposed to ambient MPOI concentration) standards, criteria or guidelines for mercury other than Guideline A-7 dealing with new or expanded municipal waste incinerators in the province. Guideline A-7 -

Combustion and Air Pollution Control Requirements for New Municipal Waste Incinerators, was adopted as MOE policy in 1996.

20. Guideline A-7 contains an emission concentration criteria for mercury of 57 ug/Rm^3, where R refers to standard conditions of 25°C, 101.3 kilopascals and 11% oxygen. The emission concentration from the proposed facility is 0.075 mg/std m^3 @ 25°C and 101.3 kPa and 7% oxygen. As noted by the MOE expert witness, in order to compare these two values, they must be put into the same standard conditions. When the facility emission concentration is converted to micrograms per cubic metre at the same temperature, pressure and an oxygen concentration of 11%, the emission concentration is 53.4 ug/Rm^3. This value is comparable to the emission concentration criterion of 57 ug/Rm^3 contained in Guideline A-7.

21. It is noted from the evidence of the MOE witness that Guideline A-7 was the subject of significant public consultation prior to it being adopted as MOE policy. From the MOE's discussion of this guideline contained in the Decision Posting on the Ontario Environmental Bill of Rights (EBR) Registry (No. PA5E0023), dated January 2, 1999, it is noted that the emission concentration for mercury of 57 ug/Rm^3 was not revised. This implies that the MOE accepted that the best available technology economically achievable could meet this requirement. As noted in the evidence of the Applicant's experts, this same mercury removal technology is being proposed in this application.

22. The estimated emission rate for mercury from the facility is 21.2 grams/hour. This corresponds to an emission concentration of 53.4 ug/Rm^3. The limit contained in the Director's condition is 11 grams/hour, or approximately 51.9% of the proposed emission rate. This corresponds to an emission concentration of (51.9% x 53.4) 27.7 ug/Rm^3. This concentration in turn is less than half of the emission concentration criterion contained in Guideline A-7.

23. There was contradictory opinion evidence presented by the Applicant's experts and MOE staff regarding whether the 11 grams/hour emission rate limit could be met with proven available technology. There was agreement that the technology proposed by the Applicant could meet an emission rate of 21.2 grams/hour.

24. Based on modelling results, it was predicted that 9 kilograms (kg) of mercury would be added to Lake Hypo annually from the operation of the facility. This prediction was based on several assumptions with respect to meteorological conditions and the form in which the mercury would be present (mercury chloride, particulate mercury or elemental mercury). These assumptions were made conservatively, resulting in overestimates of the amount of mercury deposition to the lake.

Mercury Loadings To Lake Hypo From Other Sources

25. Information from MOE witnesses suggest that there is up to 337 kg per year of mercury being added to Lake Hypo at the present time. 328 kg of this amount comes from mercury present in the river water flowing into the lake while the other 9 kg comes from atmospheric deposition from background levels in the air. These are estimates based on conservative assumptions.

26. No evidence was presented by the MOE that indicates how the 328 kg of mercury is getting into the river water in the first place and what steps are being taken to control and reduce mercury discharges into the river. It is noted that the conservative estimate of 9 kg contribution from the proposed facility is less than 2.8% of the mercury being discharged to the lake from the river.

Fish Uptake and Consumption Advisories

27. Information was presented through MOE witnesses dealing with mercury transformation into its methylated form - the one of concern since it allegedly is absorbed and has the ability to bioaccumulate through the food web. Reportedly, all of the mercury in fish is in this form.

28. The U.S. EPA's Mercury Study Report to Congress was also presented by an MOE witness. While information presented in the report indicated that the relationship between an increase in deposition and an increase in fish uptake may be as low as a 10:2 ratio or as high as 1:1, is was clear from the opinions expressed that this relationship requires much more study before reliance can be placed on this information.

29. The evidence shows that an assumption was made by MOE staff that, based on this information, there may be an increase in the mercury levels in fish in Lake Hypo of between 0.6 and 3% from the estimated 9 kg increase in mercury deposition to the lake from the proposed facility of the Applicant.

30. Further evidence was led by the MOE that the Ontario MOE guideline for mercury in fish flesh is <0.45 ppm for unrestricted consumption, restricted consumption for children under age 15 and women of child-bearing age, and no consumption of fish with mercury levels above 1.57 ppm. Again, these are guideline numbers. There are no standards with respect this these issues.

31. These fish consumption guideline values appear to have been set based on reference dose considerations to ensure no adverse health effects to humans, including sensitive sub-populations. It is noted that the estimated intake for an adult Canadian of all forms of mercury via all routes is 0.11 ug/kg.bw/day. This compares to the Agency for Toxic Substances and Disease Registry reference dose of 0.3 ug/kg.bw/day and the World Health Organization tolerable daily intake of 0.47 ug/kg.bw/day. Of this amount, fish consumption contributes 27%, or 0.029 ug/kg.bw/day.

32. If one accepts the assumptions made by the MOE witnesses, an increase in the mercury levels currently found in fish in Lake Hypo of between 0.6% and 3% may result from the Applicant's proposed facility. Based on the information placed before the Board, this could increase the contribution to the human consumer of, at most 3% of 0.029 ug/kg.bw/day, or 0.00087 ug/kg.bw/day. This in turn would increase the total mercury intake by less than 1 % (0.00087*100%/0.11).

THE LAW

The Applicable Legislation

33. Subsection 9(1) of the EPA states:

> *"9(1) No person shall, except under and in accordance with a certificate of approval issued by the Director,*
>
> *(a) construct ... any plant, ... equipment, ... or thing that may discharge or from which may be discharged a contaminant into any part of the natural environment other than water; ..."*

34. It is admitted that the facility to be constructed will contain equipment from which mercury will be discharged into the open air. The "natural environment", as defined in Section 1 of the EPA includes open air that is not contained in a building, structure, machine, chimney, stack or flue. Therefore, Section 9 applies. Recognizing this fact, the Applicant made the requisite application.

35. It is noted that Section 9 does not apply, and no approval is required under Section 9, for discharges to water.

36. Subsection 9(4) applies to the application of the Applicant. It states:

> *"9(4) The Director may refuse to issue a certificate of approval or may issue a certificate of approval on such terms and conditions as the Director considers necessary,*

> *(a)* *to ensure that any construction, ... use or operation of a plant, ... equipment, ... or thing referred to in clause (1)(a) ...will result in compliance with the Act and the regulations and any order or approval hereunder; or*
>
> *(b)* *on probable grounds, to prevent or alleviate an adverse effect."*

37. This subsection sets out the authority and power of the Director to refuse to issue an approval or to impose terms and conditions on a certificate of approval that the Director issues. The Director has no jurisdiction to deal with the issuances of certificates of approval other than as provided in Subsections 9(1) and (4).

38. It is noted that, if the application conforms with the requirements of Subsection 9(4), that is, the plant will be in compliance with the EPA and the regulations and that, based on probable grounds, no adverse effect is expected, the Director must issue the certificate of approval.

39. "Adverse effect" is defined in Section 1 of the EPA as follows:

> *"1(1) In this Act,*
>
> *'adverse effect' means one or more of,*
>
> *(a) impairment of the quality of the natural environment for any use that can be made of it,*
>
> *(b) injury or damage to property or to plant or animal life,*
>
> *(c) harm or material discomfort to any person,*
>
> *(d) an adverse effect on the health of any person,*
>
> *(e) impairment of the safety of any person,*
>
> *(f) rendering any property or plant or animal life unfit for human use,*
>
> *(g) loss of enjoyment of normal use of property, and*
>
> *(h) interference with the normal conduct of business;"*

40. It is further noted that the Director can only refuse an approval or impose a condition on an approval where the Director considers it necessary to prevent or alleviate an adverse effect **and** there are probable grounds for the Director's belief.

41. Regulation 346 is promulgated pursuant to the EPA. It is entitled, "GENERAL - AIR POLLUTION.

42. Section 5 of Regulation 346 states:

> *"5(1) The maximum concentration of a contaminant set out in Column 1 of Schedule 1 at a point of impingement from a source of contaminant, other than a motor vehicle, shall not be greater than the concentration set out opposite thereto in column 3 of Schedule 1, expressed in the unit of concentration set out opposite thereto in Column 2 of Schedule 1.*
>
> *(2) The concentration of a contaminant as a point of impingement may be calculated in accordance with the Appendix.*
>
> *(3) No person shall cause or permit the concentration of a contaminant at a point of impingement to exceed the standard prescribed in Schedule 1."*

43. Schedule 1 currently lists 87 contaminants and sets out the maximum concentration limit allowed at a point of impingement over a one-half hour averaging period for them.

44. Mercury is listed as Item 52. The concentration of mercury in total micrograms of mercury in free and combined form per cubic metre of air over the half hour averaging period is 5.0.

45. The Appendix referred to in Subsection 5(2) contains air dispersion models that may be used to calculate the concentration of a contaminant at a point of impingement for comparison with the limits contained in Schedule 1 to the regulation.

ARGUMENT RELATED TO GROUNDS OF APPEAL

A ISSUE The Director Has No Legal Authority To Impose The Condition

46. The Director is part of an administative legislative scheme to regulate and control discharges of contaminants into the air of the Province of Ontario. As such, the Director has no more authority to so regulate and control these discharges than has been given to the position by the legislation. That authority, and therefore the jurisdiction, is set out in Subsections 9(1) and (4) of the EPA. That authority and jurisdiction specifically does not include the discharge of contaminants into water as stated in Subsection 9(1).

47. As implied in Subsection 9(1), a person does not require an air approval for discharges into water.

48. Therefore, the Director has no jurisdiction under Section 9 of the EPA with respect to discharges to water. That being the case, the Director has no authority under Subsection 9(4) of the EPA to impose a condition on an air approval where the purpose of the condition is to control the discharge of a contaminant into water.

49. In the reasons given by the Director for the imposition of the condition (see Paragraph 5), the Director clearly states that condition is to control the deposit of mercury into Lake Hypo from the facility's air emissions. The Director does not have the jurisdiction or authority to impose this condition.

50. It would appear that there is a gap in the legislation if the Legislature intended to allow the Director to deal with deposition of air contaminants into water bodies. It is noted that the legislation dealing with approval of contaminant discharges to water (the *Ontario Water Resources Act*, Revised Statutes of Ontario 1990, Chapter O.40, as amended, ("OWRA")) deals with discharges of sewage into water where the related air discharge to the subject matter of this appeal would not fit the definition of sewage that is contained in the OWRA. (The definition states, "sewage" includes drainage, storm water, commercial wastes and industrial wastes and such other matter or substance as is specified by regulations ...")

51. It is up to the Legislature to correct this gap if that is its intent. The words are clear in Section 9 that no approval is required if the discharge is to water.

52. It is clear that the Director has no authority to impose the condition limiting the mercury emission from the proposed facility for the reasons that the Director has stated. Therefore, this Board should revoke the condition allowing the approval to stand without it.

53. It is noted that the Applicant has committed to the inclusion of a state-of-the-art air pollution control system for mercury that is proven to be capable of reducing mercury emissions from the facility to 21.2 grams per hour. For greater certainty, the Applicant agrees that the Board impose a condition that would state that:

> "The operator shall ensure that the mercury emission rate does not exceed 21.2 grams per hour."

54. If the Board does not agree with the interpretation of this legislation as submitted here and believes that the Director does have the jurisdiction to impose the condition, the following issues and argument are presented in the alternative.

B ISSUE The Applicant's Proposal Meets All Legal Requirements of the EPA and Regulation 346

55. As noted in Subsection 9(4) (see Paragraph 36 herein), the Director has the authority to impose a condition on an approval if it is considered necessary to ensure that the operation of the plant will comply with the Act and regulations.

56. As noted in Paragraph 16, The Applicant calculated the one-half hour point of impingement concentration using the air dispersion model set out in Regulation 346. Comparison of that calculated value and the requirement in the regulation shows that the maximum mercury concentration will be 0.01 ug/m^3. This is one five hundredth of the maximum allowable concentration of 5.0 ug/m^3 under the regulation.

57. The Board is reminded of the testimony of the MOE witness dealing with the setting of standards. The standards are established to protect human health, damage to flora and fauna, property damage and nuisance. Based on this testimony and supporting MOE document set out at Paragraph 18, this mercury standard was set on the basis of human health considerations.

58. Clearly the Applicant's proposed facility meets this requirement. It is the only legally binding standard for mercury that applies to this application.

59. The Applicant also used the SCREEN3 air dispersion model as part of the application. It showed that the one hour maximum concentration was 0.017 ug/m^3. Using a very conservative assumption that this one hour concentration would take place for 24 consecutive hours, it was noted that the MOE's AAQC for mercury for a 24 hour period of 2 ug/m^3 would also be met by a factor of over one eight-hundredth. This AAQC was also set based on human health considerations. While not a legally binding standard, comparison to it does show that there is no compliance issue in this application.

60. The Applicant also compared its stack emission concentration to that contained in the MOE's Guideline A-7 (see paragraphs 19-22). While this guideline applies to new or expanded waste incinerators and not to the Applicant's proposal, the guideline gives the only stack emission rate criterion for mercury published by the MOE. It is also a current guideline that was the subject of much public consultation, including an EBR registry public comment exercise.

61. The Applicant's proposal would meet the stack emission concentration of 57 ug/Rm^3 contained in the guideline.

62. It is noted that the Director's proposed limit of 27.7 ug/Rm^3 (equivalent to 11 grams per hour) is almost half the concentration that is allowed under Guideline A-7.

63. Based on this information, the Director has no grounds to impose the condition due to any concern regarding compliance with the EPA and the regulations as stated in clause 9(4)(a) of the EPA.

C ISSUE Probable Grounds, To Prevent or Alleviate An Adverse Effect

64. If the Director has the authority to impose the condition, it must come from the Director considering it necessary to impose the condition to prevent or alleviate an adverse effect. Not only must the Director consider it necessary, but their must be probable grounds to support the Director's position.

65. It is noted that the wording of the section states "probable grounds", not "possible grounds". It is submitted that the Director must have sufficient evidence to show that an adverse effect is probable, as opposed to possible, before the condition can be imposed.

66. It is the Applicant's position that the Director made a number of assumptions that are not supported by the information that was available. These assumptions had an accumulative effect which resulted in the Director imposing the condition without probable grounds of an adverse effect from the Applicant's emissions.

67. The Director has given reasons for the imposition of the condition. They are set out as follows:

(a) "Mercury is a persistent toxic substance that bioaccumulates". The Applicant does not challenge this statement. There is proven science to support it to a satisfactory degree.

(b) "The facility is located near Lake Hypo". The Applicant agrees.

(c) "Mercury will be deposited in the lake from the facility's air emissions." This will be discussed further below.

(d) "It is appropriate to limit the emission rate to protect life in the lake and the health of humans who may consume fish from the lake." The Applicant disagrees that there are probable grounds to link the emissions from the plant to increases in mercury levels in the fish as discussed below.

(e) "Best avaliable technology can control the emission rate to less than 11 g/hr." The Applicant disagrees with this assumption as not supported by the evidence as discussed below.

(i) Link Between Applicant's Mercury Emissions And The Mercury Levels In Lake Hypo

68. It was admitted in evidence that the prediction of the deposit of 9 kg of mercury into Lake Hypo from the facility was based on several assumptions dealing with the model, meteorological conditions and the form in which the mercury would be present. In the assumptions, the uncertainty was always resolved in favour of overestimating the amount of deposition. While it is conceded that some mercury would be deposited annually into Lake Hypo from the facility operation, the level of confidence in the 9 kg is low. All that can be said for certain is that it would not be more than 9 kg.

69. This point becomes important because of how this value is used. If, in fact, this value is overestimated by 50%, (*i.e.*, the deposition rate is 4.5 kg/yr), it is implied that the emission rate of 21.2 grams/hr predicted by the Applicant would be acceptable to the Director, based on all of the other assumptions continuing to be accepted.

(ii) Link Between Deposition from the Facility and Levels in the Lake

70. If the addition of 9 kg of mercury to Lake Hypo was of such a concern to the Director to give probable grounds of an adverse effect, it was surprising that no evidence was led by the MOE to show what, if anything, was being done to control the 328 kg of mercury entering the lake through the Inlet River. Point sources of mercury discharges should be known to the MOE through the Municipal / Industrial Strategy for Abatement ("MISA") program. If an increase in mercury levels of less than 2.8% was probable grounds for concern, it would be expected that the MOE could point to continuing efforts and results in reducing the mercury input into the lake from these water discharges that account for over 97% of the mercury in the lake.

71. The evidence noted that the mercury concentration in the water column of the lake and the Inlet River was 2 ng/l. This is below the current recommended human health criterion of the U.S. EPA of 2.9 ng/l. It is of note that this value was set after the Great Lakes Water Quality Initiative value of 1.8 ng/l was published in 1995. It is further noted that an increase of less than 2.8 % in this concentration is still well below the current 2.9 ng/l criterion.

72. It is also noted that studies of health effects continue. This brings into question the reliability and

level of confidence in the present data. This in turn raises questions with respect to the amount of "conservativeness" that gets built into these criteria to ensure too low a value is not used. For example, an increase of over 60% in the human health criterion is seen between the GLI criterion of 1995 and the U.S. EPA criterion of 1999. When we are trying to deal with a potential for an increase of less than 3%, one must consider whether the state of the science can give any definitive answers to such a small change. Once again, the Director has no probable grounds upon which to base the imposition of the condition from this information.

(iii) Link From Plant's Emissions to Protection of Humans Who May Consume Fish From The Lake

73. If all of the evidence that was presented to the Board was accepted at face value, it appears that mercury levels in fish in the lake would increase by somewhere between 0.6 and 3% because of the addition of 9 kg annually from the proposed facility.

74. Based on the cross-examination of MOE witnesses, it was shown that the prediction of the transformation of mercury into methyl mercury, the form of greatest threat to health, in the environment is as much art as science. It was readily conceded that more study is needed and that there is a wide variance in results from study to study. Again, conservative estimates are used, resulting in overprediction.

75. Similarly, the models used to predict the relationship between change in mercury deposition to the water and mercury concentration in fish require further study. Studies to date appear to show the relationship somewhere between 1:1/5 and 1:1. No one can say with any scientific certainty what the actual relationship is. Remember, the overly conservative estimate of deposition is 9 kg/year or less than 3% of the annual load to the lake. If these studies are to be used, this could result in an increase in fish concentrations of less that 0.6% to 3% of parts per million. It is submitted that these levels could not be distinquished from normal variations in background levels.

76. When we then take these overpredicted values and apply them to intake in humans, another layer of overprediction is included to make up for the lack of scientific certainty in the establishment of the reference dose used to set a minimum risk level.

(iv) Proven Best Available Control Technology Economically Achievable

77. The Applicant is a supplier to the health care sector and is mindful of human health issues. Its track record has shown that it is a forerunner in meeting, and more than meeting, its environmental responsibilities.

78. In designing this facility and the mercury control system for its air emissions, it hired experts in the engineering field with instructions to include the best removal technology that was proven and available. Economics was a factor but only so far as it would allow the plant to be able to function and make a reasonable return to shareholders.

79. The technology proposed by the applicant is state-of-the-art and is proven. The technology put forward by the MOE as an example of one that could meet the 11 gram/ hour emission concentration was still in the experimental stages. The MOE could not point this Board to one installation of comparable application where it was being used. It is not proven technology at this time.

80. The Board is reminded that Subsection 9(5) of the EPA allows the Director to alter any terms and conditions in a certficate of approval or add new ones as the Director considers necessary for the same reasons that are set out in Subsection 9(4). Therefore, if in the future, a technology is proven that is able to reduce mercury emissions below that proposed (21.2 grams/hour), the Director has the legal ability to amend the proposed condition.

CONCLUSIONS

81. Overpredictions in mercury concentrations or loadings are included in the science to make up for a lack in scientific certainty with respect to; the assumptions input into the air dispersion models and the model algorithms, the link between deposition and uptake in the water; the link between the level in the water and the uptake by the fish; the link between the level in the fish and the uptake by humans; and the determination of the reference dose used to set the minimum risk level for human consumption.

82. Based on the evidence that was before the Director and that is before this Board, there are no probable grounds to support the condition that the mercury emissions from the Applicant's facility should be reduced from 21.2 grams/hour to 11 grams/hour. While the evidence shows that mercury is a substance that must be dealt with carefully, there is no substantiated evidence that the reduction sought will alleviate or prevent an adverse effect.

83. Reduction of mercury emissions to the environment is a laudable goal. However, reductions can only be based on proven contol technologies and substantiated scientific conclusions. The Applicant has based its application and the control technology chosen on these principles.

RECOMMENDATIONS

84. That this Board find that the Director was without jurisdiction to impose the subject condition on this air approval as it deals with a discharge to water, something that is specifically excluded from Section 9 of the EPA.

85. IN THE ALTERNATIVE, that this Board revoke the condition of the Director in that there are no probable grounds to support it. The Applicant has committed to installing and operating control technology that would limit the stack emission concentration to 21.2 grams/hour. This would constitute a term of the approval. For greater certainty, the Applicant invites the Board to clarify this point by highlighting it as a condition on the face of the approval.

All respectively submitted on behalf of the Applicant, Acme Widget Limited

Dated this 20th day of October, 1999

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APPENDIX G

IN A HEARING BEFORE THE ONTARIO ENVIRONMENTAL APPEAL BOARD

BETWEEN:

ACME WIDGET LIMITED
Appellant

- and -

ONTARIO (MINISTRY OF ENVIRONMENT)
Respondent

- and -

FRIENDS OF LAKE HYPO
Intervenor

Ontario Ministry of the Environment
The Director's Submissions

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1. Acme Widget Limited, the applicant in this matter is a manufacturer that wants to build a plant near Lake Hypo. The site is upwind of the lake in relation to the prevailing wind. The manufacturing process used by Acme leads to a discharge to the air of various contaminants, including mercury. As a result, Acme is required to apply for a certificate of approval under section 9 of the *Environmental Protection Act*.

2. The Director received an application from Acme. Following a public notice period, during which the Director received several submissions, the Director finalized the technical review of the application and issued a certificate of approval to Acme. The approval includes maximum emission rates for several contaminants, including mercury. In addition, Acme, as a new source of air emssions, is required to carry out an emission inventory, as required by current Ministry policy.

3. Upon receipt of the approval, Acme appealed the mercury emission limit imposed by the Director, which is set out as follows:

   > The operator shall ensure that the mercury emission rate does not exceed 11 grams per hour.

4. The Director's stated reason for imposing this condition was:

   > The reason for imposing condition one is that mercury is a persistent toxic substance that bio-accumulates. The facility is located near Lake Hypo. Mercury will be deposited in the lake from the facility's air emissions. Best available technology can control the emission rate to less than 11/g per hour. It is appropriate to limit the emission rate to protect life in the lake and the health of humans who may consume fish from the lake.

5. Acme seeks to have the emission limit made less stringent on the following grounds:

   > The Director has no legal authority to impose the condition. In the alternative, there is no reasonable link to mercury emissions from the company's plant to the levels in Lake Hypo. There is no technology that is economically achievable that can be used to meet the required emission rate. There is no reasonable link to mercury emissions from the company's plant causing any environmental impact in Lake Hypo. The company's technology is the best available and meets the legal requirements of Regulation 346 and any guidelines or criteria that the Ministry currently employs.

6. Due to other nearby sources of pollution, including transboundary pollution, Lake Hypo currently has a concentration of 2 ng/L of mercury in the water column at any given time. This is above the criterion used by the USEPA under the Great Lakes Water Quality Initiative to protect wildlife (1.3 ng/L) and is close to the criterion used to protect human health (2.9 ng/L).

7. There are several facilities in the vicinity that currently emit mercury and there are several proposed facilities that would also emit mercury.

8. Mercury has different properties depending on its form. It has been determined that the mercury emission from Acme's plant would be 50 percent elemental mercury and 50 percent mercury chloride.

9. Because Acme's site is upwind of the lake and because the plume from Acme's stack comes into contact with the water surface, mercury from Acme will be deposited in the lake. Acme will be contributing to the mercury loading in the lake. Currently, atomospheric deposition accounts for 9 kg of mercury per year into Lake Hypo. Acme would add another 9 kg per year.

10. Once deposited in the lake, the different forms of mercury are capable of undergoing chemical reactions to convert to other types of mercury. The form of most concern to human and environ-

mental health is methyl mercury. It has been agreed that all forms of mercury undergo methylation in the lake at the same rate. Since methyl mercury is absorbed by and bio-accumulates in fish, the increase in mercury deposition to Lake Hypo from the Acme Widget plant will result in an increase in the concentration of mercury in fish.

11. Most human exposure to mercury is due to methyl mercury in food, particularly fish. Certain populations, such as Aboriginal people and other subsistence fishers, are at higher risk of exposure to methyl mercury, because of their greater reliance on fish as food. In addition, the particular sensitivity of the human fetus to mercury has led experts in both Canada and the United States to severely restrict the consumption of fish containing mercury in pregnant women, women of childbearing age and children.

12. Although some uncertainty exists with respect to mercury's behaviour in the environment and the factors affecting absorption in humans, there are volumes of evidence documenting the effects of mercury on humans and other animals. Exposure to mercury causes adverse effects on the nervous system, especially on sensory-motor function, and on reproduction in humans and many species of wildlife. It has been found to be particularly harmful both to the embryos of animals and fish and to the human fetus, causing permanent developmental deficits (including reduced cognitive and motor ability) and behavioural changes. These effects can occur at very low doses, where the mother shows no or only mild symptoms.

13. The USEPA has set the reference dose for exposure to mercury, that is, the daily dose over a lifetime at which no adverse effects are expected to occur, at 0.1 µg/kg of body weight per day.

14. Because of mercury's persistence in the environment, the fact that it bio-accumulates, and its devastating human and environmental effects at very low chronic doses, governments around the world, including Ontario, have targeted industrial emissions of mercury for elimination. For example, the Commission for Environmental Cooperation has adopted the North American Regional Action Plan for Mercury, which sets as its goal the prevention or minimization of "anthropogenic inputs of mercury to the environment." This includes two specific objectives:

(a) ambient levels of mercury should approach natural background levels; and

(b) human releases of mercury should be reduced until naturally occurring levels are achieved.

This Action Plan was approved by the Commission's governing Council of Ministers, of which both Canada and the US are members.

15. In addition, the International Joint Commission has identified mercury as one of 11 critical pollutants which are persistent, toxic and which bioaccumulate. These have been targeted for virtual elimination under the terms of the Great Lakes Water Quality Agreement. According to Annex 12 of the Agreement, all regulatory strategies dealing with these pollutants are to be undertaken with the "philosophy of zero discharge."

16. Canada and Ontario have committed themselves to accomplishing this phase out within the Great Lakes Basin ecosystem. The Great Lakes Binational Toxics Strategy was adopted by Canada and the U.S. to guide them in accomplishing the "unfinished business" of virtually eliminating persistent toxic substances from the Basin, as required by the Great Lakes Water Quality Agreement. The strategy contains a commitment by Canada to reduce mercury emissions from human sources in the Basin by 90% by the year 2000. As part of the 1994 Canada-Ontario Agreement respecting the Great Lakes Basin Ecosystem, Ontario and Canada agree to reduce the use, generation or release of mercury (and other specified priority substances) by 90% by the year 2000.

17. This is consistent with Ontario's Municipal-Industrial Strategy for Abatement of discharges to water (MISA). While that program is a comprehensive set of regulations aimed at phasing out direct

discharges to water by municipalities and industry, it would be difficult to argue, as Acme attempts to do, that the Director ought not to be trying to control indirect discharges to water via air transport.

18. Canada and Ontario are also participating through the Canadian Council of Ministers of the Environment in the development of national standards. Mercury was chosen as a priority substance for immediate action in setting standards because of concerns that mercury levels in fish across Canada exceed levels now considered safe for human consumption and concerns that some wildlife populations may be at risk.

The Regulatory Framework

19. The purpose of the Act, as set out in section 3, is to provide for the protection and conservation of the natural environment.

20. "Natural environment" is defined, in section 1, as "the air, land and water, or any combination or part thereof, of the Province of Ontario."

21. Section 9 of the Act provides as follows:

> 9. (1) No person shall, except under and in accordance with a certificate of approval issued by the Director,
>
> (a) construct, alter, extend or replace any plant, structure, equipment, apparatus, mechanism or thing that may discharge or from which may be discharged a contaminant into any part of the natural environment other than water; or
>
> (b) alter a process or rate of production with the result that a contaminant may be discharged into any part of the natural environment other than water or the rate or manner of discharge of a contaminant into any part of the natural environment other than water may be altered.
>
> 9. (2) The Director may require an applicant for a certificate of approval under subsection (1) to submit any plans, specifications and other information and to carry out and report on any tests or experiments relating to the plant, structure, equipment, apparatus, mechanism or thing or to the methods and devices to be employed to control or prevent the discharge of any contaminant into any part of the natural environment other than water and, subject to subsection (4), the Director may issue a certificate of approval.
>
> 9. (3) ...
>
> 9. (4) The Director may refuse to issue a certificate of approval or may issue a certificate of approval on such terms and conditions as the Director considers necessary,
>
> (a) to ensure that any construction, alteration, extension, replacement, use or operation of a plant, structure, equipment, apparatus, mechanism or thing referred to in clause (1) (a) or that any alteration of a process or rate of production referred to in clause (1) (b) will result in compliance with this Act and the regulations and any order or approval hereunder; or
>
> (b) on probable grounds, to prevent or alleviate an adverse effect.
>
> 9. (5) The Director may,
>
> (a) alter any terms and conditions in a certificate of approval or impose new terms and conditions; or

(b) revoke or suspend a certificate of approval,

as the Director considers necessary for the reasons set out in clause (4) (a) or (b).

9. (6) A person to whom the Director has issued a certificate of approval under subsection (1) may make any changes in respect of which it is impractical to first obtain an amendment to the certificate if,

(a) the changes are not capable of increasing the potential for discharge of a contaminant into the natural environment; and

(b) the Director is notified in writing forthwith of the changes.

9. (7) No person shall use or operate a plant, structure, equipment, apparatus, mechanism or thing for which a certificate of approval is required under clause (1) (a) unless the required certificate of approval has been issued and complied with.

22. "Adverse effect" is defined by section 1 of the Act to mean one or more of,

(a) impairment of the quality of the natural environment for any use that can be made of it,

(b) injury or damage to property or to plant or animal life,

(c) harm or material discomfort to any person,

(d) an adverse effect on the health of any person,

(e) impairment of the safety of any person,

(f) rendering any property or plant or animal life unfit for human use,

(g) loss of enjoyment of normal use of property, and

(h) interference with the normal conduct of business.

23. In addition, Regulation 346 imposes maximum point of impingement limits for various contaminants, including mercury.

Issues raised by this appeal

24. Acme raises the following issues:

(a) Does the Director have legal authority to impose the mercury emission limit;

(b) Does Acme's proposal meet all legal requirements of the Act and Regulation 346; and

(c) Does the Director have probable grounds for imposing the mercury emission limit to prevent or alleviate an adverse effect.

Issue (a) Does the Director have legal authority to impose the mercury emission limit?

25. The Director's position is that a purposive approach to interpreting and applying the Act to the current case provides clear jurisdiction for imposing the mercury emission limit.

26. Acme argues that because section 9 require a certificate of approval for anything that may discharge a contaminant into "any part of the natural environment other than water" that the Director has no jurisdiction to impose the mercury emission limit because it appears to be aimed at dealing with the discharge of mercury into Lake Hypo. This argument can only succeed if the Board accepts it in the same absence of context in which it is presented by Acme. Section 9 of the Act is just part of the legislative scheme of environmental protection in Ontario. Under this Act and others such as the *Ontario Water Resources Act*, there is provision for many kinds of approvals. Section 9 of the Act deals with discharges into the air while discharges into the water are dealt with under the *Ontario Water Resources Act*. In the present case we are dealing with a direct discharge into the air, and on that basis, that discharge is properly dealt with under section 9 of the Act. To put in concrete terms, Acme is discharging mercury through its stack into the air. If Acme was discharging mercury directly into the lake from an effluent pipe, then Acme would be quite correct to say that the Director cannot regulate that discharge under section 9. Instead, that discharge would be regulated under the *Ontario Water Resources Act*.

27. However, it is clear that since the mercury is being discharged directly into the air by Acme, the Director has the jurisdiction to deal with that discharge under section 9. Specifically, the Director has the jurisdiction to impose conditions on the approval that are considered necessary on probable grounds to prevent or alleviate an adverse effect. A purposive interpretation of this jurisdiction leads to the conclusion that the Director is permitted to deal with adverse effects due to the presence of a contaminant in the air. Since the air is part of the ecosystem, it is clear that whatever is in the air can affect other parts of the ecosystem. Water is also part of the ecosystem. If contaminants in the air affect water to the extent of causing an adverse effect, then a purposive application of section 9 leads to a finding that the Director has jurisdiction to control or prevent the entry of that contaminant into the air in the first place.

28. Adverse effect is a defined term in the Act. For example, adverse effect includes "an adverse effect on the health of any person." If Acme discharges mercury into the air and that mercury is subsequently deposited in the lake where it becomes transformed into methyl mercury, which is then taken up by fish which are caught by people and used for food, and those people become sick as a result, it becomes very difficult to understand, based on Acme's argument, why the Director would not be entitled to impose an emission limit on mercury in order to prevent that health effect. The point is that the Director is not controlling a discharge into water. Rather the Director is controlling a discharge into the air because at some point, that discharge can impair human health. It makes little difference how that impairment comes about. It just happens that in this particular case it occurs because at some point the air discharge leads to a deposition of mercury in the lake. Acme's argument simply ignores ecological reality.

29. Therefore, it is submitted that the Director has clear jurisdiction, on a purposive interpretation of the statute, to impose a mercury emission limit.

Issue (b) Does Acme's proposal meet all legal requirements of the Act and Regulation 346?

28. The Director's position is that is not sufficient for Acme to demonstrate that its emissions, when modeled, meet the maximum point of impingement standard for mercury, as set out under Regulation 346. Regulation 346 contains a mathematical model which predicts the concentration of a contaminant at any point of impingement, from the source of that contaminant. The model does not take into account the existence of other sources of that contaminant, nor does it take into account the existing ambient concentration for that contaminant. However, in the real world, there is typically an existing ambient concentration of mercury because there are other existing sources of mercury. These factors must be taken into account by the Director. It is not enough for the Director to rely solely on the modeling exercise, as carried out by Acme. The real issue is what additional load of mercury is being added to the air and subsequently the water, as a result of Acme's emissions.

29. Furthermore, the Director's concern is not related to the direct effect of mercury in the air on human health. What the Director is concerned about is the fact that Acme is emitting sufficient mercury into the air so that a significant amount is deposited into Lake Hypo where it can bio-accumulate in fish that are used for food by people. Acme's ability to demonstrate that it can comply with maximum point of impingement standards does not really address this problem. The real issue for the Director is the fact that Acme is going to contribute up to 9 kilograms of mercury per year to Lake Hypo. This is equal to the current amount of atmospheric deposition of mercury from all other sources. In effect, Acme would double the loading of mercury into Lake Hypo through atmospheric deposition.

30. Regardless of whether Acme can meet the maximum point of impingement standard, the Director is still required to ensure that appropriate conditions are imposed on the approval to alleviate adverse effects due to mercury. The Director is obligated to impose such conditions, even if those conditions would mean that Acme would be well below the maximum point of impingement standard for mercury.

Issue (c) Does the Director have probable grounds for imposing the mercury emission limit to prevent or alleviate an adverse effect?

31. The Director's position is that there is a clear basis for imposing the mercury emission limit in order to prevent the potential for an adverse effect on the health of those people who rely on fish from Lake Hypo for food.

32. The starting point for Acme's allegation that there are no probable grounds to support the imposition of the mercury emission limit is its reference to the 328 kilograms of mercury per year entering the lake through the Inlet River. Acme's argument is akin to the argument by the speeder to the police officer to the effect that "you can't stop me for speeding because those other guys are speeding too." While there may be other sources of mercury upstream of Lake Hypo, those sources, to the extent that they are discharging effluent containing mercury into the inlet river, are subject to the MISA program. The specific regulations that apply to those sources have been filed with the Board. In addition, the Board has heard evidence about how the MISA program is being implemented. As a result of the MISA program, mercury is being reduced in effluent from industry and municipalities. In the present case, the Director is dealing with Acme's air emissions, which will lead to a significant increase of mercury in the Lake Hypo airshed. While the Ministry is working to reduce all emissions of mercury into Lake Hypo, through the MISA program as well as in section 9 approvals, Acme seeks to convince the Board that it should be permitted to increase total emissions of mercury to the air and contribute to an increased loading of mercury into Lake Hypo.

33. Acme then goes on to discuss, in neutral terms, the health issue. What Acme's discussion leaves out is the fact that there is a particularly sensitive group of people who rely on fish from Lake Hypo for food. The aboriginal population eats a significantly larger amount of fish than the average population. What is clear from the evidence is the fact that the health criteria are based on the average population and not on groups such as the aboriginals who fish in Lake Hypo. Acme's claim that the numbers are conservative pales in this context.

34. Finally, Acme argues that it is using best available technology economically available to reduce mercury emissions. This argument is based on the proposition that all that Acme needs to do is to examine what is coming out of the stack and then figure out how to reduce the level of mercury. What Acme has failed to do is examine its entire process from beginning to end to see what process improvements could be made that would lead to reductions in the amount of mercury emitted before being treated by Acme's proposed pollution control equipment. Since mercury is coming out of Acme's process, it must be getting into Acme's process. This leads to the proposition that there are two points to control mercury. One point is at the stack, which is what Acme has looked at. The other point is where the mercury gets into the process, which Acme has failed to look at.

Conclusion

35. When the Director imposed the mercury emission limit in Acme's certificate of approval, the Director did so with clear legal authority under section 9 of the Act. The Director imposed that limit in order to reduce the amount of mercury from Acme's process that would end up in the air, where it could get into Lake Hypo, where it poses a danger to the health of those people who fish for food in Lake Hypo. The scientific evidence and the thrust of regulatory action in relation to mercury all point to the need to reduce the discharge of mercury to zero. The imposition of this mercury emission limit is an important step toward that important goal.

36. Therefore, the Director respectfully asks that the Board dismiss Acme's appeal and uphold the certificate of approval as issued by the Director.

APPENDIX H

IN A HEARING BEFORE
THE ONTARIO ENVIRONMENTAL APPEAL BOARD

BETWEEN:

ACME WIDGET LIMITED
Appellant
- and -
ONTARIO (MINISTRY OF ENVIRONMENT)
Respondent
- and -
FRIENDS OF LAKE HYPO
Intervenor

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INTRODUCTION

1. The appellant is seeking to have a condition imposed by the Director revoked because it is more stringent than the requirements found in the current environmental protection regulation. The Respondent Director is asking the Board to uphold the imposition of the condition. The Intervenor, Friends of Lake Hypo, submits that, given the toxicity of mercury the pollutant, its permanency in the environment, its ability to bio-accumulate in the food chain and adversely affect human health, the Board should modify the condition and impose a zero discharge standard.

PART I FACTS

2. Friends of Lake Hypo is a non-profit, environmental organization founded in 1970, with 10,000 supporters in the Windsor/Needyville area. Since 1970, Friends of Lake Hypo has been actively involved in advocating for the clean up of Lake Hypo and the surrounding ecosystem by identifying sources of contamination and working with governments and industry in cleanup efforts. The Friends of Lake Hypo works closely with the Hypo First Nation, an aboriginal band located at the delta of the Hypo River as it enters Lake Hypo. This aboriginal community of 1250 people is heavily dependent on fish from the lake and wildlife in the adjacent lands for their subsistence.

3. Due to other surrounding sources of pollution and including transboundary pollution, Lake Hypo currently has a concentration of 2 ng/L of mercury in the water column at any given time. This is above the criterion used by the US Environmental Protection Agency under the Great Lakes Water Quality Initiative to protect wildlife (1.3 ng/L) and is close to their criterion to protect human health (2.9 ng/L). There are several facilities planned for the Needyville area that will, if approved, significantly add to the mercury burden in the air and water of the Lake Hypo ecosystem.

4. In 1999, one of these facilities, Acme Widget Limited, the Appellant herein, applied under section 9 of the Ontario *Environmental Protection Act* for a Certificate of Approval (Air). The Certificate was needed as Acme will be emitting mercury into the air as a byproduct of its manufacturing process. Approximately 9 kg of this mercury will be subsequently deposited into Lake Hypo every year.

5. Following submission of Acme's application for a certificate of approval, public notice was posted on the Environmental Bill of Rights Registry. Four hundred and fifty (450) responses were received by the Ministry of the Environment, most of which conveyed serious public concern over the proposed increase in mercury emissions in the Lake Hypo ecosystem. The submissions were from local residents, ratepayers associations and both regional and national environmental organizations. The original application did not propose the use of "best available control technology, economically achievable", but following a series of articles in the National Post and a television documentary, the application was modified to include best available technology economically achievable, which now forms the application before the Board.

6. Responding to the high degree of public concern, the Director issued to Acme the required Certificate of Approval (Air) containing a condition that is more stringent than that found in Regulation 346. In doing so, the Director emphasized the need to protect human and environmental health from the cumulative effects of mercury in the ecosystem.

7. The Certificate of Approval contains the following condition:

1. The operator shall ensure that the mercury emission rate does not exceed 11 g/hour.

Reason for Condition

> The reason for imposing condition one is that mercury is a persistent toxic substance that bio-accumulates. The facility is located near Lake Hypo. Mercury will be deposited in the lake from the facility's air emissions. Best available technology can control the emission rate to less than 11/g per hour. It is appropriate to limit the emission rate to protect life in the lake and the health of humans who may consume fish from the lake.

8. Following issuance of the certificate, Acme appealed the condition to the Environmental Appeal Board (referred to subsequently as "the Board"), pursuant to section 139 of the *Environmental Protection Act* and a hearing was granted.

9. Acme Widget is appealing the condition to the Environmental Appeal Board on the following grounds:

> The Director has no legal authority to impose the condition. In the alternative, there is no reasonable link to mercury emissions from the company's plant to the levels in Lake Hypo. There is no technology that is economically achievable that can be used to meet the required emission rate. There is no reasonable link to mercury emissions from the company's plant causing any environmental impact in Lake Hypo. The company's technology is the best available and meets the legal requirements of Regulation 346 and any guidelines or criteria that the Ministry currently employs.

10. The Friends of Lake Hypo was granted intervenor status by the Board due to its history of involvement in cleaning up Lake Hypo and the knowledge regarding contaminants it is able to provide to the Board.

11. Mercury is a serious environmental pollutant, and its effects on humans and the environment are well documented.

> Source: S. Sang and B. A. Lourie, Mercury in Ontario: An Inventory of Sources, Uses and Releases (Toronto: Pollution Probe, 1996).

12. Mercury has different properties depending on its form. It has been determined that the mercury emission by the Appellant would be 50 percent elemental mercury and 50 percent mercury chloride. Once deposited in the lake, the different forms of mercury are capable of undergoing chemical reactions to convert to other types of mercury. The form of most concern to human and environmental health is methyl mercury. It is assumed that all forms of mercury undergo methylation in the lake at the same rate. Thus, the increase in mercury deposition to Lake Hypo from the Acme Widget plant will result in an increase in the concentration of mercury in fish, at a relationship of between 10:2 to 10:10.

> Source: Workshop Technical Scenario.

13. Most human exposure to mercury is due to methylmercury in food, particularly fish. Certain

populations, such as Aboriginal people and other subsistence fishers, are at higher risk of exposure to methyl mercury. In addition, the particular sensitivity of the human fetus to mercury has led experts in both Canada and the United States to severely restrict the consumption of fish containing mercury in pregnant women, women of child-bearing age and children.

Source: EPA Mercury Report to Congress; Workshop Technical Scenario.

14. Mercury concentrations in fish are accumulated and concentrate to higher exposure levels for predators and human consumers of the fish.

15. Although some uncertainty exists with respect to mercury's behaviour in the environment and the factors affecting absorption in humans, there are volumes of evidence documenting the effects of mercury on humans and other animals. Exposure to mercury causes adverse effects on the nervous system, especially on sensory-motor function, and on reproduction in humans and many species of wildlife. It has been found to be particularly harmful both to the embryos of animals/fish and to the human fetus, causing permanent developmental deficits (including reduced cognitive and motor ability) and behavioural changes. These effects can occur at very low doses, where the mother shows no or only mild symptoms.

Source: US EPA, Mercury Report to Congress, supra; Sang et al., supra.

16. US EPA has set the reference dose for exposure to mercury, that is, the daily dose over a lifetime at which no adverse effects are expected to occur, at 0.1 g/kg of body weight per day.

17. Because of mercury's persistence, ability to bioaccumulate and devastating human and environmental effects at very low chronic doses, governments around the world and international organizations have targeted anthropogenic emissions of mercury for elimination. For example, the Commission for Environmental Cooperation has adopted the North American Regional Action Plan for Mercury, which sets as its goal "to prevent or minimize anthropogenic inputs of mercury to the environment." This includes two specific objectives: that ambient levels of mercury should approach natural background levels and that human releases of mercury should be reduced until naturally occurring levels are achieved. This Action Plan was approved by the Commission's governing Council of Ministers, of which both Canada and the US are members. In addition, the International Joint Commission has identified mercury as one of 11 critical pollutants which are persistent, toxic and bioaccumulative and are therefore targeted for "virtual elimination" under the terms of the Great Lakes Water Quality Agreement. According to Annex 12 of the Agreement, all regulatory strategies dealing with these pollutants are to undertaken with the "philosophy of zero discharge."

18. Canada and Ontario have committed themselves to accomplishing this phase out within the Great Lakes Basin ecosystem. The Great Lakes Binational Toxics Strategy was adopted by Canada and the U.S. to guide them in accomplishing the "unfinished business" of virtually eliminating persistent toxic substances from the Basin, as required by the Great Lakes Water Quality Agreement. The strategy contains a commitment by Canada to reduce mercury emissions from human sources in the Basin by 90% by 2000. As part of the 1994 Canada-Ontario Agreement respecting the Great Lakes Basin Ecosystem, Ontario and Canada agree to reduce the use, generation or release of mercury (and other specified priority substances) by 90% by 2000. Recent statements by the Ontario Minister of the Environment have confirmed the province's commitment to these goals.

19. Canada and Ontario are also participating through the Canadian Council of Ministers of the Environment in the development of "Canada wide standards". Mercury was chosen as a priority substance for immediate action in setting standards because of concerns that mercury levels in fish across Canada exceed levels now considered safe for human consumption and concerns that some wildlife populations may be at risk. While the process for development of the Canada-wide standard for mercury is on-going, the Canada-Wide Accord on Environmental Harmonization, the umbrella governing agreement that guides the development of these standards, commits the parties to developing these standards employing pollution prevention and other precautionary principles.

20. Governments have made clear their commitment to the virtual elimination of anthropogenic releases of mercury. Every incremental increase, no matter how apparently small, works against that commitment. The only way that commitment can ever be accomplished is to prevent each and every new source from adding mercury to the environment.

PART II POINTS IN ISSUE

21. The intervenor submits that the following points are in issue in this appeal:

1. Does the Director have jurisdiction to impose the proposed condition as granted in the certificate of approval?
2. Has the Director met the statutory requirements for exercise of that jurisdiction?
3. Does the Board have jurisdiction and grounds for imposing a condition more stringent than that imposed by the Director?

PART III INTERVENOR'S ARGUMENTS ON THE POINTS IN ISSUE

1. Does the Director have jurisdiction to impose the proposed conditions as granted in the certificate of approval?

22. It is respectfully submitted that the Director has the jurisdiction to impose an air approval condition. This jurisdiction persists even though (a) one of the benefits of the condition is to protect water resources and (b) the condition imposed is even more stringent than the regulations.

(a) Can the Director impose a section 9 approval to protect both air and water resources?

23. Both the governing legislation and jurisdiction makes it clear that the Director can impose a section 9 air approval condition in order to protect water resources.

Overview to the Legislative Provisions

24. The stated purpose of the Ontario Environmental Protection Act (EPA) is to provide for the "protection and conservation of the natural environment".

> Source: *Environmental Protection Act* R.S.O. 1990, c. E.19, s. 3(1).

25. The Director is appointed by the Minister under the Act to implement and enforce its provisions. The authority for the Director to issue a certificate of approval is found in s. 9:

> 9(1) No person shall, except under and in accordance with a certificate of approval issued by the director, construct ... any plant ... that may discharge or from which may be discharged a contaminant into any part of the natural environment other than water.
>
> 9(4)(a) The Director may refuse to issue a certificate of approval or may issue a

> certificate of approval on such terms and conditions as the Director considers necessary, to ensure than any construction, alteration, extension, replacement, use or operation of a plant, structure, equipment, apparatus, mechanism or thing referred to in clause (1)(a) ... will result in compliance with this Act and the regulations and any order or approval hereunder; or (b) on probable grounds, to prevent or alleviate an adverse effect.
>
> 1.–(1) In this Act, "adverse effect" means one or more of, impairment of the quality of the natural environment for any use that can be made of it, injury or damage to property or to plant or animal life, harm or material discomfort to any person, an adverse effect on the health of any person, impairment of the safety of any person, rendering any property or plant or animal life unfit for human use, loss of enjoyment of normal use of property, and interference with the normal conduct of business.

26. Regulation 346 is the general air pollution regulation promulgated under the EPA. The regulation establishes three separate standards designed limit the emissions of contaminants to air: The nuisance standard, the opacity or black smoke standard and emission standards. Emission standards are calculated using the concentration of a contaminant at a point of impingement. A point of impingement is a point where contaminants from a point source come into contact with the ground

> Source: R.R.O. 1990, Reg 346.

Section 5(1) of Regulation 346 states:

> "The maximum concentration of a contaminant set out in Column 1 of Schedule 1 at a point of impingement from a source of contaminant, other than a motor vehicle, shall not be greater than the concentration set out opposite thereto in Column 3 of Schedule 1, expressed in the unit of concentration set out opposite thereto in Column 2 of Schedule 1".

27. The point of impingement standard in Schedule 1 for alkyl mercury is 1.5 ug per cubic metre of air, and for free and combined mercury, 5 ug per cubic metre of air.

Applying the Legislative Framework

28. Section 9 of the Act applies to all discharges of contaminants into air. The Appellant contends that because the Director based the condition on effects associated with deposition to water, rather than air, the Director exceeded his jurisdiction. While a portion of Acme's mercury emissions will subsequently affect humans and other life forms via their deposition into the water of Lake Hypo, section 9 and the related air regulations are still applicable.

29. Section 9(1) of the EPA requires a certificate of approval before any facility may be constructed that may discharge a contaminant into the air. There is no dispute that Acme will discharge mercury into the air from its facility. Thus, a certificate of approval is required.

30. Section 9(4) of the EPA gives the Director authority to refuse such a certificate or impose conditions to ensure compliance with the Act or to prevent or alleviate an "adverse effect". "Adverse effect" is defined broadly in s. 1 to include a range of effects, including "injury _ to plant or animal life", "harm or material discomfort to any person" and "impairment of the quality of the natural environment_" "Natural environment" is defined to mean "the air, land and water, or any combination or part thereof, of the Province of Ontario".

31. Thus, the EPA is clear about the authority of the Director, in imposing a condition on an air certificate, to prevent resulting effects on water and human or animal health. When the Director imposed

the condition on Acme's certificate, he was acting within his jurisdiction. To accept the Appellant's position would lead to an absurd result, requiring the Director to ignore the fact that all components of the environment are interconnected and thereby contribute to the Director being unable to protect the natural environment.

(b) Can the Director impose a condition more stringent than the regulations?

32. It is submitted that, where the Director has probable grounds for believing that compliance with an existing regulatory standard will be inadequate to prevent or alleviate an adverse effect, the Director has authority to impose a more stringent standard. The Ontario Environmental Appeal Board has held that the Director (or the Board itself on appeal) has authority to go beyond the regulations and set a standard that is more stringent than that found in the regulations, if appropriate in an individual case. In addition, the Board has held that there is authority to tailor conditions in a certificate of approval to specific industrial processes and situations and failure to consider the individual circumstances may be unreasonable.

> Sources: *Uniroyal Chemical Ltd. v. Ontario* (Ministry of the Environment), [1992] OEAB, No.(Republic Environmental systems Brantford) Ltd. v. Director (MOEE), [1994] OEAB File no.6. 00314.A1, cited in Residents Against Company Pollution Inc. v. Ontario (MOEE), [1996] OEAB 29.

33. The Ontario MOE witness admitted that the point of impingement standards in Reg. 346 do not address the cumulative or persistent nature of a contaminant, merely its concentration at a hypothetical site. In addition, she admitted that the standards fail to take into account long-range transport, long term deposition, very short-term effects, very long-term effects, bioaccumulation, persistence, additive and synergistic effects or multiple source situations.

34. Further evidence of the inadequacy of the standards in Reg. 346 comes from an internal review of the regulation by the Ministry:

> The dispersion models are outdated and do not consider all adverse meteorological conditions or lakeshore effects. ... The regulation does not directly limit the persistent toxic emission loadings to the environment. The regulation permits the use of dispersion to bring the local concentrations down to acceptable levels; but, it does not take into account the fact that the pollutants can accumulate within the environment or be transported long distances and contribute to regional problems. The combined effects of multiple emission sources are not addressed by the Regulation.
>
> Source: Ministry of the Environment and Energy, Regulation Review O. Reg. 346, General Air Regulation, October 1995. (Obtained by the Canadian Environmental Law Association pursuant to a Freedom of Information and Protection of Privacy Act request, file #PDB960135).

35. These serious inadequacies in the regulatory standard, particularly as they relate to a proposal to emit mercury, a persistent, bioaccumulative toxic substance, gave the Director ample grounds for imposing a more stringent standard on the Appellant. If he had not done so, the Director would have failed to carry out his statutory obligation to protect the natural environment and prevent potentially devastating adverse effects. There is no jurisdictional or other constraint on the Director from imposing such a condition.

36. It is respectfully submitted therefore that the Director does have the jurisdiction to impose the condition as stated in the certificate of approval.

2. *Has the Director met the statutory requirements for exercise of that jurisdiction?*

37. Although the Director has the jurisdiction to impose certain conditions, the Director still must meet the regulatory requirements before such conditions can be imposed. In this context, two statutory conditions that are relevant relate to the standard of proof and the need for an adverse effect.

38. It is respectfully submitted that these conditions have been met, and thus, allowing the Director to exercise its statutory discretion to impose such conditions.

(a) Standard of proof

39. Section 9(4)(b) specifies that the standard of proof to be used by the Environmental Appeal Board in the present appeal is the "probable grounds" standard. The words "on probable grounds", as used in s. 9(4)(b) of the Act, indicate a standard of proof different from the "balance of probabilities" standard normally associated with civil tribunals in Ontario.

> Source: *Residents Against Company Pollution Inc. v. Ontario (Ministry of Environment and Energy)* [1996] O.E.A.B. No. 29 [hereinafter Residents] cited to QL

40. The language in s. 9(4)(b) implies a lower standard than the "reasonable and probable grounds" standard found in other provisions of the Act, such as s. 18(2). The s. 18(2) "reasonable and probable grounds" standard is also known as the "good reason to believe standard", and is regarded as a lower standard than the "balance of probabilities" standard.

> Source: *Residents Against Company Pollution Inc. v. Ontario (Ministry of Environment and Energy)* [1996] O.E.A.B. No. 29 [hereinafter Residents] cited to QL

41. Since the word "reasonable" is left out in s. 9(4)(b), the "probable grounds" standard should be characterized as a lower standard than both the "balance of probabilities" standard and the "reasonable and probable grounds" standard. The "probable grounds" standard should therefore only require that the Board has "some reason to believe" that a condition is necessary to prevent or alleviate an adverse effect, pursuant to s. 9(4)(b).

42. The Court should recognize how difficult it is to ascertain precisely the point at which an "effect" crosses the threshold and becomes an "adverse effect". In Domtar (supra at 50) the Board stated that "the immediate effect of the discharge of a contaminant to the natural environment may be difficult to ascertain, even with the most sophisticated testing procedures". The Board also stated that "[b]y the time environmental damage is proven, remedial action may not be available or be too late." Furthermore, the Board held that the Act "must be given a broad and liberal interpretation, one that enables the Director to identify and regulate potential as well as existing environmental problems."

(b) Adverse Effect

43. In a prior decision of the Board, the term "impairment" as found in s. 1(1)(a) includes the dictionary meaning: "Impair: To grow or become worse; to suffer injury or loss; to deteriorate". This decision also indicates that under s. 1(1)(a) of the Act, an "adverse effect" has occurred where the quality of the environment has been worsened for any use that can be made of it.

> Source: *Domtar Inc. v. Ontario* (Ministry of Environment) [1989] O.E.A.B. No. 15, File No. EAB 18.87

44. Used in a similar context to "adverse effect", some provinces use the term "deleterious" in regulatory legislation. For this reason, the term "adverse effect" may be interpreted to be synonymous with "deleterious" or "deleterious effect". In R. v. Alcan Smelters and Chemicals Ltd. (1998), 37 W.C.B. (2d) 313, the British Columbia Court of Appeal held that a discharge of waste may be deleterious to the environment if contaminants in the waste add to an overall accumulation of a harmful substance.

45. When determining whether a substance may cause an "adverse effect" under s. 1(1)(a) of the Act, the trier of fact should be concerned with the pollutant's capacity to cause an "adverse effect" as opposed to whether an "adverse effect" actually would occur.

> Source: *R. v. Imperial Oil Ltd.* (1995), 17 C.E.L.R. (N.S.) 12 (Ont. Ct. (Prov. Div.)), aff'd (unreported, September 5, 1997, Ont. C.A.)).

46. The Courts have held that impairment can be taken to include any cumulative impact on the environment, for instance, where an addition of a substance to a lake would not cause immediate harm, but would delay the recovery of a lake from prior pollution.

> Source: *R. v. Falconbridge Mines Ltd.* (1982), 8 W.C.B. 17 (Ont. Prov. Ct).

47. Recently, the Board has commented on the use of numerical limits in regulations when deciding on whether to give a third party leave to appeal a certificate of approval under the EBR. In the Board's view, "it is open to leave applicants to show that the potential harm from smaller amounts of contaminant is significant; for example, by evidence that emissions are capable of causing adverse effects at a level that complies with the numerical standards. However, in the absence of such evidence, compliance with the numerical standard may be assumed to be sufficient to eliminate the possibility of harm." In the Residents case, the Board held that in the context of the EBR, an "adverse effect" may be caused at a level that complies with numerical standards which would be found in regulations.

> Source: *Residents Against Company Pollution Inc. v. Ontario (Ministry of Environment and Energy)* [1996] O.E.A.B. No. 29 [hereinafter Residents] cited to QL

48. The Director made a number of assumptions during negotiations with the Appellant and subsequently during the hearing that are firmly supported by available information. These assumptions do have safety factors built in that make them "conservative". However, the reason for using these factors is a function of the many uncertainties that remain about the behavior of mercury and the processes by which it is taken up by humans and by which it causes adverse effects. It is submitted that the nature of this contaminant as a persistent, bioaccumulative toxic substance demand that conservative assumptions be made and those made by the Director may not be conservative enough.

49. Given the inadequacy of the numerical limits established in the regulation to address bio-accumulative, toxic and persistent substances such as mercury, the Director had probable grounds to invoke a more stringent standard. Moreover, it is appropriate for the Director to look at cumulative effects, especially from a substance like mercury, in fashioning conditions in certificates of approval.

3. *Does the Board have jurisdiction and grounds for imposing a condition requiring zero discharge of mercury?*

50. It is respectfully submitted that the Board should impose a condition requiring zero discharge of mercury. Principles such as the precautionary principle provide the basis upon which justify the condition.

(a) General

51. Section 144(1) of the Environmental Protection Act allows the Board to step into the Director's shoes and make any decision that the Director could make relating to the subject matter of the appeal. The Board may direct the Director to take such action as the Board considers the Director should take in accordance with the Act and the regulations. Since the subject matter of the appeal is the condition of the certificate granted by the Director pursuant to s. 9(4), the Board has jurisdiction to

confirm, revoke or alter the conditions of the certificate of approval. The Board may also, pursuant to s. 144(1) of the Act, confirm, revoke, alter, or substitute the decision of the Director to approve the s. 9(4) certificate of approval.

52. The Board has a responsibility of upholding the Act and implementing its purposes. Where necessary to achieve the purpose of the Act and where appropriate, the Board has the authority to set standards on a case by case basis.

> Source: *Uniroyal Chemical Ltd. v. Ontario* (Ministry of Environment) [1992] O.E.A.B. No. 6).

53. The Board, stepping into the shoes of the Director with respect to statutory authority on appeal, has authority to tailor conditions in a certificate of approval to specific industrial processes and situations.

> Source: *Republic Environmental Systems (Brantford) Ltd. v. Director, Ministry of Environment and Energy* [1994] O.E.A.B. File no. 00314.A1, as cited in Residents Against Company Pollution Inc. v. Ontario (Ministry of Environment and Energy) [1996] O.E.A.B. 29.

54. The Intervenor agrees with the Director's reasons for the imposition of the condition of approval, but does not agree that the condition is stringent enough to prevent potentially devastating adverse effects or to allow Ontario to meet its commitments under the Canada-Ontario Agreement respecting the Great Lakes Basin Ecosystem. It is submitted that the evidence supports the imposition of a zero discharge limit, that is, a condition that reads "the operator shall ensure that the mercury emission rate does not exceed 0.0 grams per hour".

55. The Board has jurisdiction under s. 144(1) of the Act to impose a zero discharge standard as a condition in the Appellant's certificate of approval, where the standard is necessary, on probable grounds, to prevent or alleviate an adverse effect pursuant to s. 9(4)(b).

56. The Board is a protector of the public interest and should exercise its discretion to impose a condition on appeal where, as in the present appeal, the condition is necessary on probable grounds to alleviate or prevent an adverse effect. The Board, where not satisfied that a condition is sufficient to meet the requirements of s. 9(4)(b), should direct the Director to take action in accordance with the Act and the regulations.

57. The purpose of the Act, found in s. 3(1), is to "provide for the protection and conservation of the natural environment". Therefore the Board has jurisdiction to instruct the Director to "provide for the protection and conservation of the natural environment", and impose a zero discharge standard where, as in the present appeal, it is necessary, on probable grounds, to alleviate or prevent an adverse effect.

(b) The Precautionary Principle

58. It is submitted that the Director failed to take into account the Ministry's policy and the precautionary principle in imposing the condition. Under the Ontario Environmental Bill of Rights, the Ministry of the Environment was required to adopt a Statement of Environmental Values ("SEV"). The mandate of the MOE, as stated in the SEV is to "protect the quality of the natural environment so as to safeguard the ecosystem and human health; coordinate the government's energy supply and demand-related activities; and foster the efficient use and conservation of resources". Furthermore, the MOE commits itself to implementing an ecosystem approach to environmental protection. When making decisions, the Ministry states that it will "consider the cumulative effects on the environment; the interdependence of air, land, water and living organisms; and the interactions among the environment, the economy and society". Finally, with respect to environmental protection, the MOE states that its "priority will be to first prevent [pollutants'] release to the environment and second, to minimize their release".

59. Statements of Environmental Values are required to be considered in the making of decisions on policies, programs, regulations and instruments such as certificates of approval. It is submitted that the Director's failure to consider the Ministry's pollution prevention policies as set out in its SEV and its commitments to eliminate new emissions of mercury to the Great Lakes Basin caused him to underestimate the need for a more stringent condition.

60. In the absence of scientific certainty, the Environmental Appeal Board should invoke the "Precautionary Principle" to support the imposition of a zero discharge standard for mercury in the conditions of approval.

61. The most widely accepted definition of the precautionary principle in Canada is elicited by the Canadian Council of Ministers of Environment. It states that "where there are threats of serious or irreversible environmental damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.

61.

Source: Canadian Council of Ministers of the Environment, "A Canada-Wide Accord on Environmental Harmonization" as cited in E.L. Hughes et al., eds., Environmental Law and Policy, 2nd ed. (Toronto: Emond Montgomery Publications, 1998) at 69.

62. The Precautionary Principle has also been defined and adopted by the Rio Declaration's Principle 15. Principle 15 holds that "in order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation." The precautionary principle is an established principle of international law, observed by numerous international legal scholars.

Sources: (Rio Declaration on Environment and Development, June 13, 1992, 31 I.L.M. 874); (Report of the United Nations Conference on Environment and Development, Distr. General, A/CONF.151/26 (Vol.I-III), 12 August 1992 as cited in P. Frye, "A Social Biosphere: Environmental Impact Assessment, the Innu, and Their Environment" (1998) 56(2) U.T. Fac. L. Rev. 177 at para. 9 (QL)).(Report of the United Nations Conference on Environment and Development, Distr. General, A/CONF.151/26 (Vol.I-III), 12 August 1992 as cited in P. Frye, "A Social Biosphere: Environmental Impact Assessment, the Innu, and Their Environment" (1998) 56(2) U.T. Fac. L. Rev. 177 at para. 9 (QL)).

63. Some commentators believe that the precautionary principle has become a customary international norm.

Source: *O. McIntyre & T. Mosedale*, "The Precautionary Principle as a Norm of Customary International Law" (1997) 9 J. Env. L. 221.

64. The precautionary principle has also found recent authority with the International Court of Justice.

Source: Submission of Hungary to the International Court of Justice in *Republic of Hungary v. The Czech and Slovak Republic on the Diversion of the Danube River*, as quoted in O. McIntyre & T. Mosedale, "The Precautionary Principle as a Norm of Customary International Law" (1997) 9 J. Env. L. 221 at 231.

65. The precautionary principle, although traditionally cited with authority in relation to international legal disputes, has found recent authority in domestic Canadian federal law.

Source: *Canadian Environmental Protection Act*, S.C. 1999 (passed September, 1999). An Act respecting pollution prevention and the protection of the environment and human health in order to contribute sustainable development, 1st Sess., 36th Parl., 1997-98, preamble. Also see: *Oceans Act*, S.C. 1996, c. 31, s. 28;

66. Canadian legal scholars hold that principles of international law, such as the precautionary principle, are perfectly valid means of elaborating the meaning of the Canadian Charter of Rights and Freedoms, and there is no reason to believe that the same principles do not apply to the elaboration of the common law.

> Source: M. Bastarache, "The Challenge of the Law in the New Millenium" (1998) 25 Man. L.J. 411 at para. 9 (QL).

67. It has long been recognized that customary international norms not contradicted by a domestic statute are a valid part of Canadian domestic law. Thus, since the precautionary principle is a customary international norm, not apparently contradicted by domestic legislation in Ontario, the precautionary principle should be considered a valid part of Ontario law.

> Source: M. Bastarache, "The Challenge of the Law in the New Millenium" (1998) 25 Man. L.J. 411 at para. 7 (QL).

68. The precautionary approach, as set out in Principle 15 of the Rio Declaration and in other international instruments, has been adopted by Canadian federal and provincial legislators. Not only does the binding statutory nature of the Canadian Environmental Assessment Act attest to this, but its purposes, which provide for a comprehensive assessment process prior to project implementation, reinforce the presence of the precautionary principle in Canadian law.

> Source: P. Frye, "A Social Biosphere: Environmental Impact Assessment, the Innu, and Their Environment" (1998) 56(2) U.T. Fac. L. Rev. 177 at para. 8 (QL)

69. It is respectfully submitted that the precautionary principle has been invoked in the context of Canadian provincial environmental law, most notably in Ontario and British Columbia. Therefore, the Ontario Environmental Appeal Board should feel compelled to consider a precautionary approach in the present appeal, where like the examples below, the facts of the case are largely dependent upon uncertain scientific evidence.

70. In *611428 Ontario Ltd. v. Metropolitan Toronto and Region Conservation Authority* [1996] O.J. No. 1392 [hereinafter Metro], the Ontario Court of Justice endorsed the Ontario Mining and Lands Commissioner's argument that the precautionary principle applies to Ontario administrative hearings. In Metro, the issue of whether the Commissioner reasonably inferred that dump fill would alter a nearby downstream ecosystem was examined. The Ontario Court of Justice endorsed the Commissioner's view that where no scientific model is presented at a hearing to indicate a threshold test for the intrusion of pollution into a watershed beyond which development should not be allowed, the application of the precautionary principle is warranted.

> Source: *611428 Ontario Ltd. v. Metropolitan Toronto and Region Conservation Authority* [1996] O.J. No. 1392.

71. The British Columbia Environmental Appeal Board has endorsed the view of the appellant that "Canada has recognized the Precautionary Principle" and that "the appeal board must follow suit; which means that where a decision about public health and/or safety and/or health of ecosystems must be made without adequate supporting scientific data, the action must err on the side of protection of public health/safety and the health of the ecosystem". The court also endorsed an agreement between the respondent Ministry and the permit holder to "favour a precautionary approach to pesticide use and that where there are other methods available that reduce risks, that they would use them."

> Source: *Shuswap Thompson Organic Producers Assn. v. British Columbia (Ministry of Environment, Lands and Parks)* [1998] B.C.E.A. No. 24 [hereinafter Shuswap] (QL).

72. "Part III: Guiding Principles for the Ministry of Environment and Energy" states that the MOE,

including the Director of the MOE involved in the present appeal, "will exercise a precautionary approach in its decision making". As the MOE itself writes, "especially when there is uncertainty about the risk presented by particular pollutants or classes of pollutants, the Ministry will exercise caution in favour of the environment".

73. The precautionary principle should be applied where there is a threat of serious or irreversible damage, where there is a lack of scientific certainty and where there is a postponement of cost-effective measures to prevent threats of serious or irreversible damage. Where all three of these requirements are satisfied, the precautionary approach compels the trier of fact to err on the side of caution, and ensure that approval is granted only where the threat of serious or irreversible harm to humans or the environment is prevented or alleviated.

74. It is respectfully submitted that the Board can and should impose a zero discharge limit on the Appellant based upon binding policy and legal commitments undertaken by Ontario and Canada to eliminate anthropogenic sources of mercury, to give priority to pollution prevention and, when faced with uncertainty and the threat of serious or irreversible harm, to act with precaution. To do less would fail to protect Ontario's environment.

PART IV - NATURE OF ORDER DESIRED

75. For all the foregoing reasons, it is requested that the Ontario Environmental Appeal Board allow the present appeal, and impose as a condition of the Appellant's Certificate of Approval (Air), the following condition:

> "The operator shall ensure that the mercury emission rate does not exceed 0.0 grams per hour."

ALL OF WHICH IS RESPECTFULLY SUBMITTED this 19th day of October 1999.

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